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AMERICAN AVIATION

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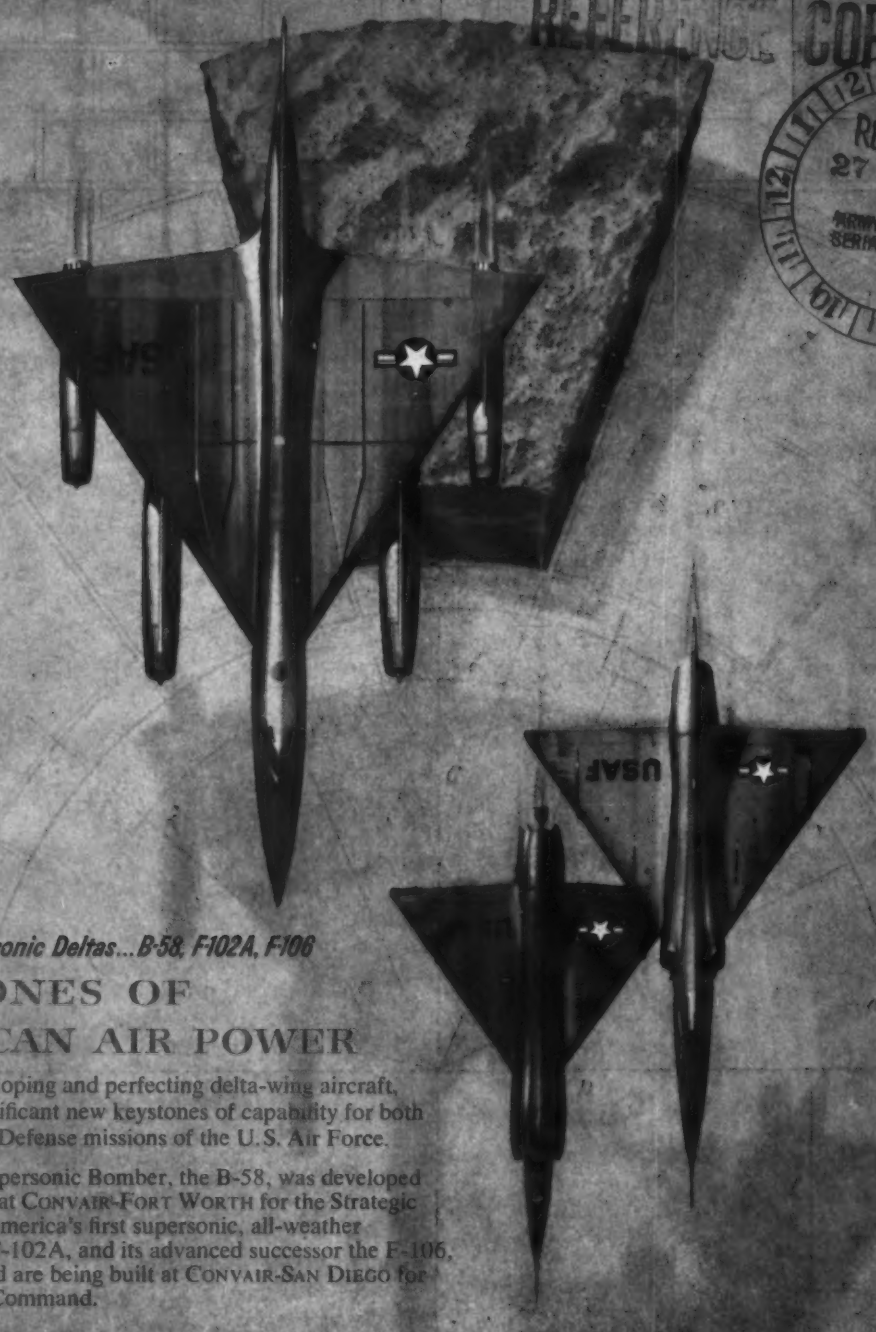

Convair's Supersonic Deltas...B-58, F102A, F106

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Convair, by developing and perfecting delta-wing aircraft, has provided significant new keystones of capability for both the Strategic and Defense missions of the U.S. Air Force.

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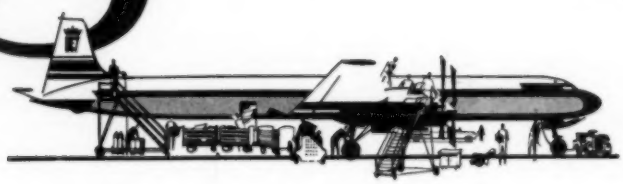
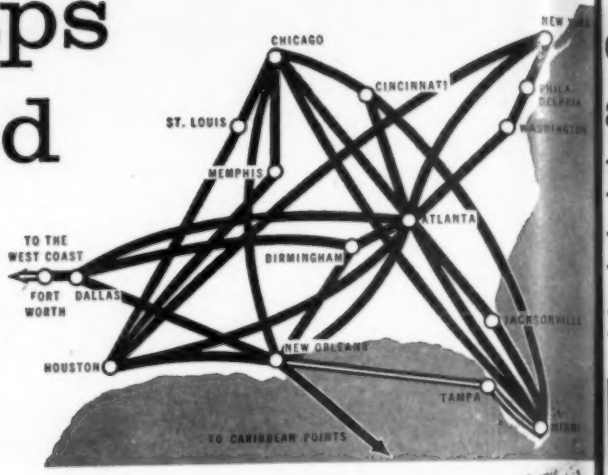
CONVAIR A DIVISION OF GENERAL DYNAMICS CORPORATION

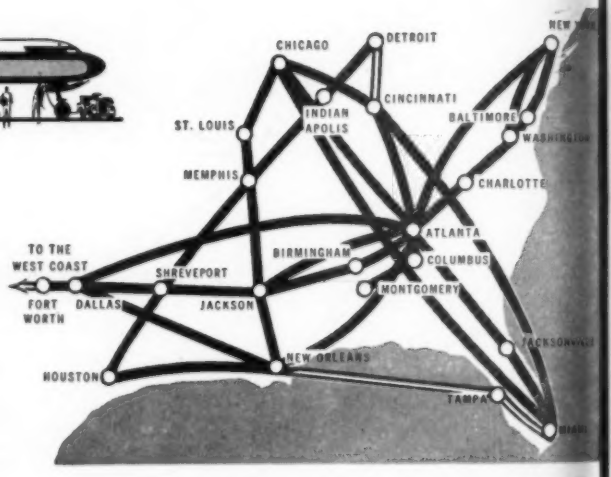
Delta maps its expanded services

3 WAYS





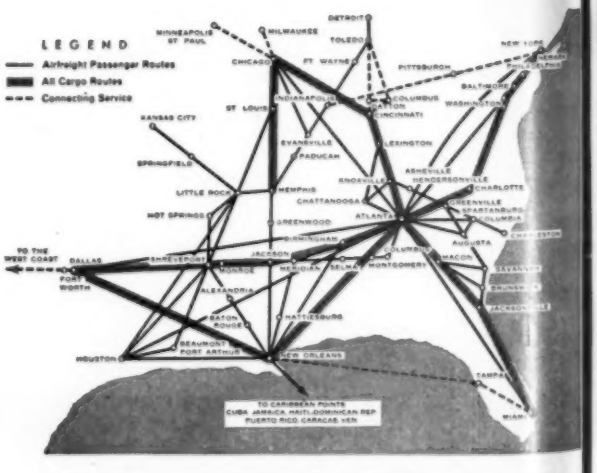
Golden Crown DC-7, DC-7B Network



"Flying Scot" Aircoach Network
(Day and Night)

Here's a look ahead at the course of Delta's current expansion program—just as radar looks ahead on Delta-liners to give passengers the "Velvet Ride." Here are the facts.

- The new year brings more luxury service than ever on Delta. Delivery of 10 new DC-7B's has lifted the Golden Crown fleet total to 21 DC-7B's and DC-7's. This fleet links 18 major cities, accounts for 53% of all seat miles flown, makes Delta, proportionately, *the foremost operator of DC-7 series aircraft.*
- By the end of January 1958 new DC-7B's in 90-seat coach configuration, will be in service both day and night as "Flying Scots." Aircoach service by DC-7's, DC-6's and Convairs currently contributes 35% of Delta's seat miles.
- Delta has increased it's Cargo capacity 600%, with the addition of 5 new all-cargo Airfreighters. All Delta flights carry AIR FREIGHT, and Delta now offers the most comprehensive cargo service to and through the South.
- **1959-1960-JETS,** Ground and air personnel are already in training for the Jet Era, will be ready when deliveries of Douglas DC-8 and Convair 880 Jetliners begin. Until then, *Delta continues to pace the industry and the South in all three types of air service.*



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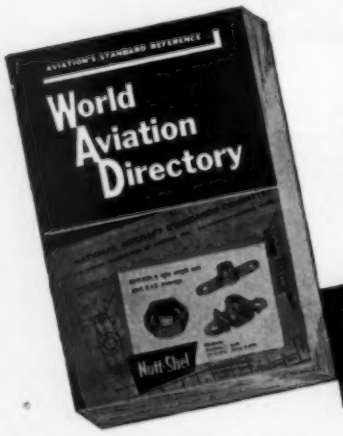

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BPA

DECEMBER 30, 1957—VOL. 21, NO. 16

AMERICAN AVIATION

WORLD'S LARGEST AVIATION PUBLISHERS

NACA's new clamshell jet thrust reverser

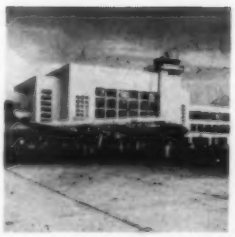
A device that not only gives the pilot jet reverse thrust on landing but instantaneous control of thrust in the air has been revealed by NACA. Pictorial details are shown page 23.

Small jets with high-thrust-to-weight ratios

Manufacturers are looking to a new generation of turbines expected next year that will give them more thrust per pound than heretofore possible. See analysis page 30.

How intricate Bomarc guidance is tested

The Boeing missile probably will be backed up by some of the most comprehensive flight tests ever made. How Farnsworth Electronics is doing this job is described on page 32.



Panagra sells luxury, frequency in S. America

The system combats cut-raters in the lucrative Latin market. International Editor Anthony Vandyk surveyed the company's operations. For his on-the-spot report see page 40.

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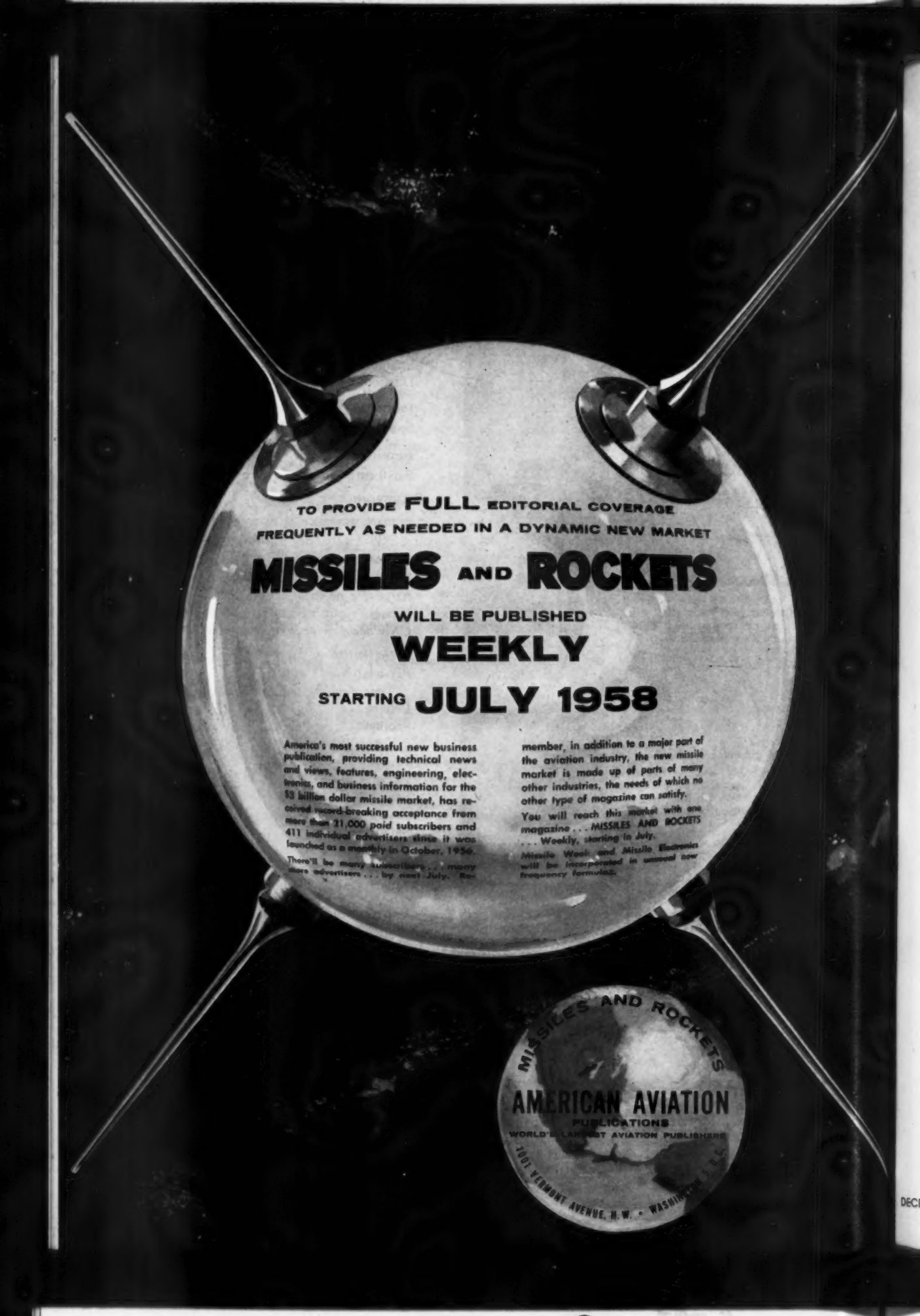
Defense Dept. will ask Congress for $40 billion for fiscal 1959, reports Elizabeth Oswald, AMERICAN AVIATION's Defense Editor, in an exclusive analysis of budget needs to be submitted around Jan. 13. This is a record peacetime request and nearly $2 billion more than originally planned. Its impact on the aircraft industry will be great. For complete details see page 19.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The Sand is Draining Through the Hourglass

THE CIVIL AERONAUTICS BOARD would be wise to take a tip from America's present disastrous situation in the space and missile field.

The air transport industry is heading for calamity unless the CAB wastes no more time in discharging its responsibility to the Congress, to the public and to the industry.

It was timidity, lack of foresight and lack of understanding at the top which put the U.S. behind the eight-ball around the world in the space and missile programs.

It is timidity, lack of foresight and lack of understanding that are driving the air transport industry into an historical period of chaos.

The sands in the hourglass are steadily moving through the narrow passageway. Where is the leadership that Congress, the public and the industry expect of a mature regulatory body?

One of the most potent indictments yet leveled at the CAB has come from the aviation securities committee of the Investment Bankers Association of America.

Just read these two paragraphs:

"In essence, the CAB and its staff have not adjusted to or grown with the dynamics of the airline industry and the expansion of the national economy. Through rigid application of historical concepts and practices, the authority may unwittingly cripple the very industry it is charged by law with encouraging and developing.

"As but one indication of this trend, the CAB staff announced its latest opposition to any general rate increase with the amazing statement that 'the current general fare level will provide sufficient revenue not only for operating expenses but also for the capital costs of the carriers.' "

As we wrote a month ago in this space, we believe the root of the trouble today is the Board's own appraisal of its responsibilities. In certain other areas, the CAB has taken real initiative, but when it comes to rates it wants to act as a final court. Such a method is not only obsolete, but it is forcing the industry into a disastrous financial situation.

There has been much talk in Washington that the CAB staff is basically opposed to private enterprise, that there is a state socialism ideology throughout the staff which actually favors keeping the industry forever indentured to the state.

One can scarcely escape this conclusion on the basis of evidence to date, but one can hardly excuse the five Board members for falling prey to such a philosophy and ideology.

In these days real American leadership is needed. It has not been forthcoming to date from the CAB. If the CAB openly established a policy of converting the U.S. airline network into a second-rate system, it would be more honest than its present silence. For it is, indeed, driving the industry into a second-rate status.

Despite the day-to-day evidence available, it is undoubtedly still true that the CAB has not yet awakened to the disaster that is close upon the industry. But it had better awaken before it's too late.

We were interested that the aviation securities committee of IBA recommended that the President appoint an individual of the highest qualifications to undertake a complete review of the Civil Aeronautics Act and CAB procedures under the Act, with the aim of presenting to the President and to Congress a concrete program for constructive action.

The IBA is saying, in effect, that the CAB has to date failed in its responsibilities to assert leadership. We can only concur that White House action is necessary unless the CAB moves quickly to manage a rapidly deteriorating situation.

CAB Chairman Durfee was thrust into a very big role when he assumed office early in 1956. He was faced with a lot of problems not of his making. His task is not an enviable one. And yet it is simple, too, if he will but doff the robes of the judiciary and become the type of government leader-manager needed to handle problems of a fast-moving world. The opportunity is great—but it won't last too long. An over-riding authority acting on White House instructions will move inevitably into the picture to straighten out the wreckage if Chairman Durfee misses his cue.

This is a great country. But its leaders are all too often letting little men—little men of narrow concepts and anti-private enterprise ideologies—swing the major influence in decisions. The little men who block progress have nothing to lose. The big men have. The test between big and little is here now.

The Secret is Out

Well, hallelujah, it has finally been revealed that the Air Force can now talk about "space flights" or attempts to "fly to the moon." Great stuff. It seems that the House Government Information Subcommittee dug up a memorandum recently which the Air Force had issued some time back to prohibit Air Force people from talking about space projects.

What with several Soviet Sputniks in the air and a belated awakening all around, the Air Force has now rescinded the memorandum. Gracious, what a daring step!

Wayne W. Parrish

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The Canadair CL-28 is the most formidable search, strike and kill maritime patrol weapon in the air today. It is in quantity production for the Royal Canadian Air Force and is available for purchase.

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AIRTRENDS

Supplemental budget for speed-up of USAF ballistic missiles program, due to go to Capitol Hill shortly after Congress reconvenes, is expected to total about $200 million. Figures do not include production costs for Jupiter or additional money to start production of Titan.

Congress will pay more attention to the adequacy of funds for maintenance and operations—and particularly those funds needed to keep organizations such as Strategic Air Command combat-ready. Congressional investigators were "shocked" by testimony of Gen. Curtis E. LeMay, USAF Vice Chief of Staff, that SAC was for the most part grounded during the last five weeks of fiscal 1957 for lack of money to pay for fuel. This condition reportedly was repeated in August 1957.

Gen. Thomas Power, new SAC chief, is said to have commented that failure to provide flying time has delayed SAC readiness by at least eight months. Navy rules on proficiency flying are also being questioned as "inadequate."

Better management—particularly of research and development programs aimed at reducing the long development cycle—will be the goal of Army, Navy and USAF in the year ahead. Army Secretary Brucker has a long letter from the Army Scientific Advisory Panel pointing to the need for simplifying the decision-making process. Dr. Frederick L. Hovde, panel chairman, cited the need for clarification of roles and missions, creation of an "effective mechanism" for directing research and development to support national missions (i.e., those where more than one service is involved), and for improvement of decision-making processes through the national defense program.

Management failures of USAF pointed out recently on Capitol Hill by Dr. J. Sterling Livingston, Harvard Business Administration professor, are being worked on by a special ad hoc committee set up by USAF's Scientific Advisory Committee and by committees of ARDC and Air Materiel Command.

The worst-kept secret report in Washington, the so-called Gaither report, is expected to have an important impact on both military planning and Congressional action in the next session of Congress. The report calls for a rapidly rising defense budget through fiscal 1970 and sweeping changes in the organization of the Defense Dept. and in the Pentagon's command structure.

No possibility of a tax cut is foreseen, as a result. The report, which was written by many "experts" drawn from civilian life, also calls for prompt lifting of the current debt ceiling and a "revitalizing of the U.S. retaliatory offensive forces." Budget Bureau is already looking at a proposed DOD reorganization plan.

Congressional heat will be on the Navy to concentrate on finding answers to the threat of Soviet submarines carrying missiles. While the Navy says that it spends about 61% of its budget for antisubmarine warfare, Navy concepts include the attack carrier task force as an element. Congress may well insist that answers be found to the submarine threat even at the expense of the long-range carrier program. It will argue that the air is basically a responsibility of USAF, that Navy's responsibility is control of the sea and the threat that comes from the sea in the form of missile-carrying submarines, while Army's job is to improve tactical weapons needed for control of the land.

Rear Adm. C. E. Weakley, responsible for antisubmarine warfare, has told the Johnson (D.-Tex.) Preparedness Subcommittee that both men and money are needed for his program.

their

LeMay warns senators many SAC bombers are grounded

North American Wins

DIGEST

New procurement rule requires contractors to finance 20% of cost-type contracts, with some exceptions

New military cost-reimbursement type contracts will carry clauses designed to assure investment by contractors in work-in-process, under a directive by Defense Secretary Neil H. McElroy.

New provisions of the Armed Services Procurement Regulation spell out the policy. In addition, contracts to which the new rules are not applicable are explained. So far only the Navy has issued implementing instructions. Army and Air Force instructions to procurement officers are to be issued shortly.

Exemptions to the rule, which requires that contractors finance at least 20% of the work-in-process on cost-type contracts, are provided for the following type contracts:

(1) When the contractor receives no fee or profit.

(2) When the contractor is an educational institution or non-profit organization.

(3) When the sole purpose is to provide for the operation of government-owned plants or vessels.

(4) When the contractor is a small business concern.

(5) For research and development which do not call for quantity production.

(6) When work is to be performed outside the United States, its territories and possessions and Puerto Rico.

(7) When the estimated cost is not in excess of $250,000.

(8) For construction and architect-engineer services.

(9) Where undue hardship would result to the contractor or adversely affect the government's interest.

Other changes in the ASPR Rules emphasize the change in direction of government procurement policy—requiring more capital investment from contractors. These changes include:

(1) Provisions which will allow procurement officers to consider the extent of the capital investment in fixing the contractor's fee or profit. Similarly, in those cases where the government is forced to provide "extraordinary" financial, facility or other assistance, fees or profits are likely to be reduced.

In addition to withholding 20% of the cost of work-in-process until delivery of hardware, the ASPR amendments make it clear that only 85% of the fixed fees are to be paid in accordance with contract schedules. Payment of fixed fees will be withheld thereafter until a reserve of 15% of the total fixed fee is created, or $100,000, whichever is less. These balances are to be retained until the execution and delivery of a release by the contractor.

The new rules have already been put into effect by the Navy under Secretary of Navy Instruction 4290.1. Similar rules are to be issued by the Army and Air Force. The new rules will govern new contracts only. Renegotiation of outstanding contracts is a matter between the services and their contractors.

Indications are that the Navy would try to renegotiate its cost-type contracts largely on the theory that the total savings would be small and that serious time would be lost in placement of new contracts. AF renegotiation is applicable to a few contractors only.

NACA scientist predicts 13,000-mph gliders

Rocket-powered gliders with speeds ranging up to 13,000 mph were predicted by H. Julian Allen, National Advisory Committee for Aeronautics scientist, in the 21st annual Wright Brothers lecture at the Smithsonian Institution in Washington.

Allen envisioned the vehicle as one which could be fired to gliding altitude and velocity by a rocket and then descend and decelerate through the earth's atmosphere with the lift on its wings and the centrifugal force of its velocity counter-balancing its weight. Glider would travel at speeds between 5,500 mph and 13,500 mph and altitudes up to 275,000 ft.

Allen acknowledged that many obstacles are yet to be cleared before the high-speed, dart-shaped aircraft would be as efficient as supersonic aircraft on long flights.

Lockheed gets C-130B order

Air Force has placed an order for quantity production of the Lockheed C-130B Hercules turboprop contract. Initial allocation authorized by the letter contract is $22 million. Total value of the award is estimated at about $100 million to cover 53 aircraft.

The "B" models of the four-engine combat transport are powered by Allison T56-A-7 turbine engines geared to 13½-ft. Hamilton Standard Hydromatic four-bladed propellers.

External fuel tanks boost F-104 range

TORPEDO-SHAPED pylon tanks each contain 200 gallons of fuel for added mission range for Lockheed F-104A Starfighter. Supersonic fighter is powered by General Electric J79 turbojet which develops more than 12,000 lbs. thrust. Tanks and pylons are jettisonable. Fins on tanks are for stability.

LeMay warns senators many SAC bombers are grounded by lack of funds, U.S. retaliatory forces weakened

Senate investigators have concluded the second phase of a sweeping probe of U.S. defense on a grim note of warning from Air Force Vice Chief of Staff Curtis LeMay, former commander of the Strategic Air Command.

Unless planners act promptly to improve the U.S. retaliatory bomber force "we're going to be in an inferior position to the Russians in a very short time," Gen. LeMay declared.

The Senate Preparedness Subcommittee, in preparation for hearings set to resume Jan. 6, is digesting reams of testimony from Defense Department, service witnesses and weapon authorities.

Among numerous recommendations, investigators have under study a proposal by Harvard University business professor Dr. J. Sterling Livingston. He suggested the establishment of an independent organization, modeled after the Office of Scientific Research, to lay the research groundwork for radical new weapon systems.

LeMay expressed concern over the possibility of missile and satellite publicity overshadowing needs of SAC retaliatory forces. He urged military planners not to forsake vital aircraft needs for excessive futuristic research.

Gen. LeMay declared that the U.S. probably will be using medium-range bombers in 1970 no matter how far advanced missiles become. He urged Congress to approve ample funds to continue bomber production and speed the dispersal of SAC bases.

LeMay made the startling announcement that many SAC long-range bombers were grounded during the last five months of Fiscal Year 1957. He pinned the development squarely on a shortage of gasoline funds. If the charge is true, it should provide already angry defense advocates with new ammunition.

The cigar-chewing general called for more funds to provide for a 15-minute alert status for SAC bombers. In answer to queries from the subcommittee he said he believes the United States still leads Russia in air striking power. He said, however, that the Soviets are advancing at a rate that would allow them to outstrip this nation by mid-1959.

The blunt-speaking airman also confirmed that a stretch-out in the B-52 program is still in effect.

Harvard professor Sterling Livingston, veteran surveyor of DOD organizational structure, told investigators the Soviets are developing advanced manned aircraft twice as fast as the United States. He termed U.S. long lead-time a critical factor in the arms race. And he proposed:

Trimming both R&D and prototype lead-times.

Authorization of production tooling upon design approval despite the possibility some tooling might later be scrapped. He asserted that the Russians tool up in about a year as compared to 2¾ years in the U.S.

Delegation of greater leeway for contractors to make technical decisions.

Creation of a military weapon system phasing group empowered to make quick binding decisions.

With graphic charts, Dr. Livingston demonstrated that the time consumed in obtaining an agreement within DOD often far exceeded the time spent in planning a new system.

Preparation of vital documents in some instances, he said, sometimes consume 24 months, with an extra delay of 25 months extracting an agreement.

It is Dr. Livingston's view that planning time can only be shaved by removing early development phases from military control.

Sen. Stuart Symington (D-Mo.) promptly raised an objection to the Livingston proposals. He observed that hours are frittered away now in "reprogramming" and budget procedures.

Chairman Lyndon Johnson (D-Tex.) summarized collective opinions of witnesses thus far this way:

An independent civilian agency should be established to push U.S. missile and satellite programs.

A "new-look" DOD staff for applied and basic research is needed.

Restrictions on contractors who want to forge ahead on their own technical decisions should be removed.

Lead-time must be pared through prompt and firm decisions.

Overtime restrictions should be quickly wiped out.

Research and development should be shifted to a three-to-five-year basis.

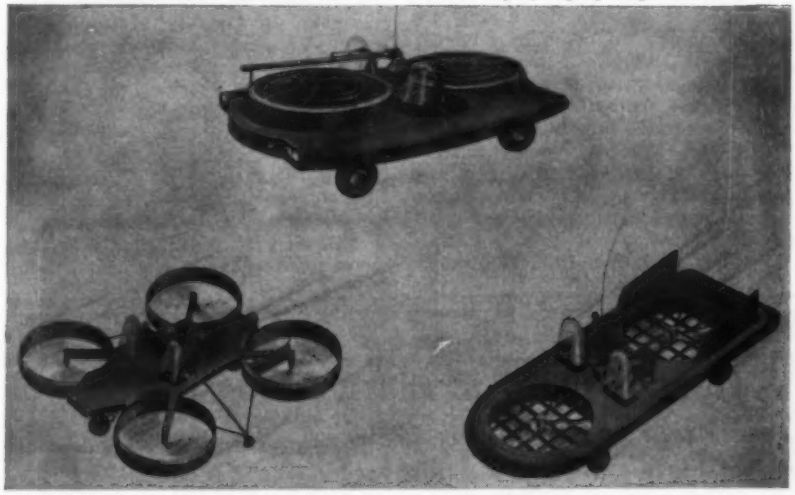
North American Wins WS-110A Competition

North American Aviation, Inc. has won the competition for the WS-110A, high-speed bomber, Air Secretary James Douglas announced Monday. The plane is to be capable of speeds in excess of 2,000 miles an hour over long ranges and will fly at altitudes in excess of 70,000 feet.

Award of the contract to North American started with the grant of design study contracts in 1955. Boeing Airplane Co. and North American were in the competition down to the finish line. The so-called "chemical bomber" will have new and advanced engines and new fuels not yet fully developed.

Receipt by North American of the development contract followed studies by evaluation teams which visited both NAA and Boeing, and recommendations made by the Air Materiel Command to the Air Staff in Washington.

New design changes revealed in Army jeep proposals



Changes in design proposals for three versions of an Army aerial jeep are revealed in latest illustrations released by the Army. Three firms are working under contracts totaling $1,702,637 (AMERICAN AVIATION, August 12) for the ducted-fan vehicles.

Aerophysics Development Corp.'s model, left, has four ducted fans at each corner of platform. Changes over earlier proposal include side-by-side rather than tandem seating and wheels instead of skids. Crewman in right seat mans machine gun.

Chrysler Corp.'s version, center, has two fans in tandem. Wheels have been added to earlier version and windshields installed. Crewman in right seat handles recoilless rifle.

Piasecki Helicopter Corp. has two fans in tandem on its jeep, right. Changes have moved pilot seat from left front corner of platform to center section, added a second seat and wheels. Vehicle has vertical fins on both sides aft.

BRIEFS

Manufacturing—military

North American Aviation has received Air Force contracts to rehabilitate and overhaul 158 F-86 fighters and all-weather interceptors. Contracts call for rehabilitation of 98 F-86D interceptors of Air Defense Command and 60 F-86F fighters for Air National Guard.

Cohu Electronics, Inc. has acquired Millivac Instrument Corp. and Volkers & Schaffer, Inc., New York, through an exchange of stock. Acquired companies will be merged into single operating company known as Millivac division of Cohu Electronics. Dr. Walter Volkers will be president of the division.

Kaman Aircraft Corp. has received a $13-million Navy contract for a prototype quantity of HU2K-1 utility helicopters. Craft will be powered by General Electric T58 engines.

Air Force will sell 108 surplus planes with original value of nearly $11 million Jan. 10 at Norton AFB, Calif. Included are 24 T-6Gs, 20 T-28As, 20 C-45Gs, four C-46As, 10 B-25s, 13 B-26s and 17 F-51s.

Lockheed Aircraft Corp. has vacated Plant 8 at Bakersfield, Calif. Company also is reassigning Electra and P2V subassemblies from Maywood to Burbank. Maywood will continue with Model 1049 fuselage and wing subassemblies.

Aircraft firms have paid $28,968,750.98 to Los Angeles County as first installment on tax bills. Douglas paid $11,070,382.67; Lockheed, $7,786,550.79; North American, $7 million; Hughes Aircraft, $2,223,478.65; and The Garrett Corp., $888,347.87.

A. M. Rochlen, vp-public relations at Douglas Aircraft Co., is recuperating from an illness and will remain at home about six weeks before returning to work.

Rohr Aircraft Corp. is scheduled to deliver its first shipment of five power packages for the Convair 880 in the fall of 1958. Four of the complete power package assemblies will comprise one plane's set for the first aircraft. The extra unit will be used for test purposes at Convair's thermodynamic laboratory.

Ford Motor Co. has released about 1,000 employes at its Aircraft Engine division at Chicago because of military spending cutbacks. Employment totaled 8,719 Dec. 1, down from 12,295 a year ago.

Doman Helicopters, Inc. has been awarded a contract for IRAN work on all Army and Air National Guard reconnaissance-type helicopters in the 13 states where the First and Second Army are based. Contract runs for a year. No figure has been announced.

The Budd Co., manufacturer of automotive and railroad equipment, has purchased about 10% of the outstanding stock of Solar Aircraft Co. Budd has asked Solar to study advisability of a merger and to have two Budd representatives on the Solar board.

Transport

New York Airways is giving "serious" consideration to purchase of a fleet of tandem-rotor Vertol 44B helicopters equipped with amphibious flotation gear for operation on its routes in the New York City area. Robert L. Cummings Jr., NYA president, said the helicopters may be introduced in service in the late spring of 1958.

William V. Henzey, chief transport editor of American Aviation Publications, has been appointed part-time lecturer in air transportation at Georgetown University, Washington, D.C.

American Airlines on Jan. 5 will start the first nonstop service by a U.S. carrier between Chicago and Mexico City, with a daily DC-7 roundtrip. Combination-type planes will carry 32 first-class and 38 coach passengers.

Bennett H. "Benny" Griffin, director of Washington National Airport since 1947, will retire Feb. 1. He will be succeeded by Lucius W. Burton, director of development and planning at the airport.

John H. Clemson, v.p. of TWA, will become an adviser to Defense Air Transportation Administration on temporary assignment, starting Jan. 1.

CAB has proposed increased temporary mail rates for Lake Central Airlines under which the carrier would get $1,312,802 for the period Jan. 1 through Sept. 30, 1957, or $85,605 more than the rate in effect.

CAB Examiner Merritt Ruhlen has recommended that Southwest Airways be permitted to change its name to Pacific Airlines. Move was opposed by Pacific Northern Airlines, South Pacific Airlines, Pacific Air Freight and Pacific Southwest Airlines, but Ruhlen ruled out the objection of confusion arising from the name change.

California Eastern Aviation has agreed to lease three Lockheed 1049H Constellations to Hughes Tool Co., owner of Trans World Airlines. Planes would be leased for a three-year period at a monthly rental of $40,000 per aircraft. Deal is subject to CAB approval.

Financial

Northrop Aircraft reports income for the first quarter of its fiscal year was $1,421,173, or 93¢ a common share on sales of $63,903,264. Year ago first quarter net was $1,136,089, or 75¢ a share on sales of $73,342,553. Company expects more than $130 million in new contracts before end of year.

Obituaries

Group Capt. D. F. McIntyre, 52, managing director of Scottish Aviation Ltd., Prestwick, was killed Dec. 8 when one of his company's Twin Pioneers crashed in the desert south of Tripoli, Libya. McIntyre, well known in British aviation, was a pilot for the 1933 Mt. Everest expedition and was a co-founder of Prestwick Airport. He had been with Scottish Aviation since 1935 and was largely responsible for the Pioneer and Twin Pioneer aircraft programs.

Robert Wellesley Anthony Brewer, 80, consulting engineer and aircraft designer, died in Philadelphia on Dec. 6. He had served as engineering designer with Pitcairn Aviation, as engineering consultant to Fokker Aircraft Corp., and as chief of aircraft engine design at the Naval Aircraft Factory, Philadelphia.

Chance Vought receives $200-million contract

Chance Vought aircraft has been awarded contracts totaling $200-million from Navy for a new version of the Crusader, the F8U-2, and continued production of the F8U-1.

To My Friends in the Aviation Industry:

Wishing you all a Merry Christmas and as we poise for routine line check before takeoff flight NBR 1958 let us be sure we double check our moral, spiritual as well as physical stability. Present weather report over entire route requires instrument clearance and no alternates. As we slip down the runway let us keep in mind we can communicate at all times with station "Our Maker" on frequency "Faith" and let us be thankful for nature's riches bestowed on us with warmest regards.

THOMAS F. RYAN

Appeal to reason

To the Editor:

A recent opportunity to review and digest the CAB's opinion in the Passenger Fare Increase Case plus an admiration for 90% of your editorials on the CAB and its actions has resulted in this letter. It is possible that the following remarks are unwarranted and that an opportunity to also study the airline briefs submitted in the above case or more thoroughly digest all issues of AMERICAN AVIATION would show me the error in my thinking. However, my feelings at the moment are so strong as to become vocal.

Regardless of the capability of Civil Aeronautics Board members or the soundness of its policies, the passenger fare increase case could have been honestly decided in no other manner. The majority of the airlines apparently presented their cases so poorly as to leave the Board no alternate decision. Mr. Louis J. Hector's separate concurrence outlined such weaknesses all too clearly when he criticized the carriers for failing to present:

(a) Long-range traffic projections, including traffic stimulation anticipated from the introduction of jet aircraft;

(b) Aircraft purchase and disposal programs related to (a);

(c) Financing plans necessary to accomplish (b);

(d) Rate of return or level of earnings necessary to accomplish (c);

(e) Passenger fare levels necessary to accomplish (d); and

(f) Evidence that the proposed increased fares are compatible with the traffic projections with which the planning begins.

In addition it appears from reading the opinion, that the carriers completely failed to furnish evidence that the 6% increase which they requested was adequate for their present needs.

Repeatedly in this hearing the CAB shifts responsibility to management. Perhaps they do so too frequently but it seems certain the someone other than their stockholders should start needling management. The financial, accounting and statistical staffs of the average carrier are well qualified to prepare the type of presentation necessary to sound judgment by the Board.

Why are the carriers purchasing jet equipment in such quantities that they must be used on runs too short for peak efficiency as proven by facts familiar to them and graphically presented in your publications? Why are they reluctant to make known their program for retirement of existing equipment when it is obvious that break-even load factor's can not be maintained with their ultimate seat-mile capacity? Certainly there has been some consideration of these problems and the Board can hardly be expected to blindly grant fare increases without such data before them.

My suggestion is that you, through your publications, be a little rougher on carrier management in respects such as this. Possibly I'm naive in suggesting such a thought to the publisher of the carrier's "bibles," but I think not because I've frequently admired your courage in similar matters.

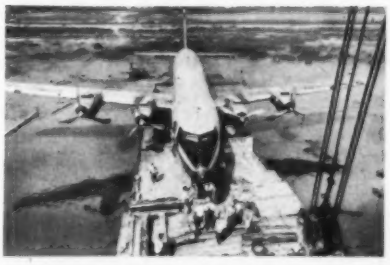
Those of us with long years of airline experience, and believe me those years *were* long, know that airline management is one of the toughest of fields. We also know that this management has had to progress from the state where every pilot was, through necessity, a self-appointed Vice President and Assistant General Manager to the point where one person was expected to have the capabilities of a G. M. President at a fraction of the salary. This we know, but isn't it now time to push for better teamwork among the many specialists within each carrier? Isn't it now the time for management to sell the general public as well as the Board on the need for a sound return on their investment (and I don't necessarily mean 8%)? Isn't this the proper time to sell the public on the most efficient type of travel rather than the fastest block-to-block travel?

How about building a few such fires? *G. J. FAY, Shillington & Fay, Certified Public Accountants, Miami 32, Florida.*

On salvaging a DC-6A

To the Editor:

Just returned from abroad to see the layout devoted to the salvage and repair of the Flying Tiger DC-6A by Lockheed



Aircraft Service-International (AMERICAN AVIATION, Sept. 9, p. 67). You certainly turned it into a dramatic and story-telling page. *MEL ADAMS, Mel Adams and Associates, Inc., New York City.*

We hope so, too

To the Editor:

In your editorial, "Accessory Producers are Hard Pressed" (AMERICAN AVIATION, Oct. 21, p. 13), you painted an accurate word picture of the present problems of accessory producers. It may be hoped that your words will improve the understanding of these problems, and may in some way help to alleviate them. *B. W. BADENOCH, general manager, Aero Hydraulics Div., Vickers Inc., Detroit.*

Liked Hunter's SAE story

To the Editor:

Thank you for your excellent coverage by Fred Hunter of the recent SAE National Aeronautic Meeting and Production Forum in Los Angeles.

Your reports on this meeting will give a great deal of satisfaction to the hundreds of persons who worked to make it a success and should stimulate increased interest and attendance next year. *ROBERT W. CRORY, Society of Automotive Engineers, Inc., New York, N.Y.*

Briton speaks on ATC

To the Editor:

I was very interested to see Sam Saint's article in AMERICAN AVIATION for Dec. 2 regarding the findings of the Curtis Committee and the problems of their implementation. I must say I was very disappointed myself in the outcome of this much-vaunted Committee, but I believe it is simply another example of the failure of those in high places to appreciate what a devil of a problem this one of air traffic control really is.

You have certainly picked on some of the knottier aspects of it in your article, and I would agree that this latest committee does not take us much further than SC31—if as far. However, I am not sure that the case for the fixed-block principle implied in SC31 was a very sound one in the first place. Though you seem now to favour it, and certainly did in those early days, I think your heart is really behind the good practical arguments you put up against the reverse proposals by the Curtis Committee in favour of moving-block en route and fixed-block in the terminal area, to wit the present system.

The more I puzzle about air traffic control, the more I find myself humbly recognizing the merits of the existing system with all its deficiencies. None of the schemes I have seen proposed in America or in Europe so far really show a breakthrough into some new system which will throw off the shackles of the old one. In fact I think that some of the schemes proposed—like automatic flight progress display and data relay—may prove more cumbersome than the controller's pencil and telephone. I think that small evolutionary improvements can be made in the present scheme—more widespread use of more dependable radar data and so on—but we cannot expect any revolutionary improvement of a ground-based aircraft separation system.

The basic weakness seems to me to be inherent in the whole method of separation by a ground agency. We are using approximate and out of date information on the positions of individual aircraft and very rough estimates of their future positions in order to estimate their relative positions for separation purposes. Consequently we have to use outrageously large separations blocking off a million times each aircraft's volume as a buffer to make up for the deficiencies in our knowledge. Thus we get an artificial "air space saturation" problem which is 99.9999% of our own making.

We need to return to fundamentals and to realize that it is the *instantaneous relative position* of aircraft which determines the collision risk and not their approximate geographical positions. I believe that the breakthrough will eventually come through a wider application of air-to-air means of aircraft separation. Air traffic control will then be confined to ensuring an orderly flow along routes and into and out of airports with the separation primarily in the hands of pilots. This would be analogous to the traffic situations on the roads and at sea.

I know it is extremely difficult to develop a suitable air-to-air collision-avoidance device and suitable techniques

for its use, but once such techniques are developed the problem of air saturation can disappear almost overnight and we shall be able to achieve extremely high movement rates into and out of airports. There will be much less restriction of altitude and path, and avoiding action will be limited to those occasions on which it is physically necessary—an infinitesimally small proportion of the occasions on which ATC have to restrict freedom of movement under the present system.

In short, I think the ATC system of aircraft separation is reaching a point of diminishing returns where more and more gigantic and costly efforts are necessary to make ever-decreasing advances in its capacity and efficiency. A small proportion of this effort diverted to air-to-air means of separation would help to bring this alternative system into being and thenceforth there would be unlimited scope for further traffic increase and the elimination of restriction of aircraft movements. *D. O. FRASER, The English Electric Company Ltd., London.*

Editor's note—Sam Saint says: Agree that present ATC system is basically much better than many hecklers think. However, early columns will: (1) suggest that a major breakthrough in automatic data handling and display is now within reach and is urgently needed; (2) argue that there is danger in too broad application of present radar-type control; and (3) suggest that an air-to-air position determining device might prove a valuable aid to ATC.

Admirer and critic

To the Editor:

AMERICAN AVIATION is, without question, the very top publication in its field and I look forward to every issue. Occasionally, you publish an issue which deserves special comment and praise. The Dec. 2 AA was just such an issue. Sam Saint was certainly at his best in that article on the traffic control mess and William Henzey's "How to run an airline —CAB style" was excellent, too. As usual, "En Route" and "Personal View" were interesting and informative. While I don't go along with turning all aircraft into flying saloons, your editorial ideas are generally sound most of the time.

I would offer one criticism. While you are quick to complain about Charlie Wilson and his economy axe, you pay little attention to the terrible waste in the aviation branches of our armed forces. Not a word is ever offered against the Air Force meat heads who are spending tax money on the Ground Observer Corps, SAGE (something you really should look into), or Navy blunders like the R3Y Tradewinds. . . . *JAMES F. VAUGHN, Cleveland, Ohio.*

Add bouquets

To the Editor:

While we must admit to a certain amount of prejudice, we think you covered the subject ("New silicones crash hydraulic-fluid thermal barrier," AMERICAN AVIATION, Nov. 18, p. 41) very well. . . . *W. E. HARRIS, press relations, General Electric Chemical and Metallurgical Div., Waterford, N.Y.*

To the Editor:

We are happy that one of the first full releases of the Rotorcycle Characteristics appeared in AMERICAN AVIATION (Nov. 18, p. 37). We all feel the article was very well presented. . . . *JOHN F. STRAUBEL, acting public relations manager, Hiller Helicopters, Palo Alto, Calif.*

To the Editor:

I have been reading Sam Saint's articles in AMERICAN AVIATION since he started them and really think he is doing a great job. I particularly like his recent one on Ernie Cutrell. Perhaps the reason is that I feel recognition of pilots like Ernie, who have contributed so significantly to aviation developments, has long been due.

The public knows of the pilots who break the speed records and other headline-grabbing escapades, but all too little attention is given to those who through the years have in their own quiet manner made such outstanding contributions to the safety of the general public as Ernie Cutrell. *A. PAUL VANCE, Aviation Fluid Sales, Monsanto Chemical Co., St. Louis.*

To the Editor:

I've just finished reading Sam Saint's article on Ernie Cutrell. Congratulations both to ALPA for recognizing Ernie's contributions to all-weather flight and to Sam for letting the world know about it . . . . *COL. S. A. MUNDELL, USAF, Chief Air Traffic Control and Navigation Div., Directorate of Systems Management, Wright-Patterson AFB, Ohio.*

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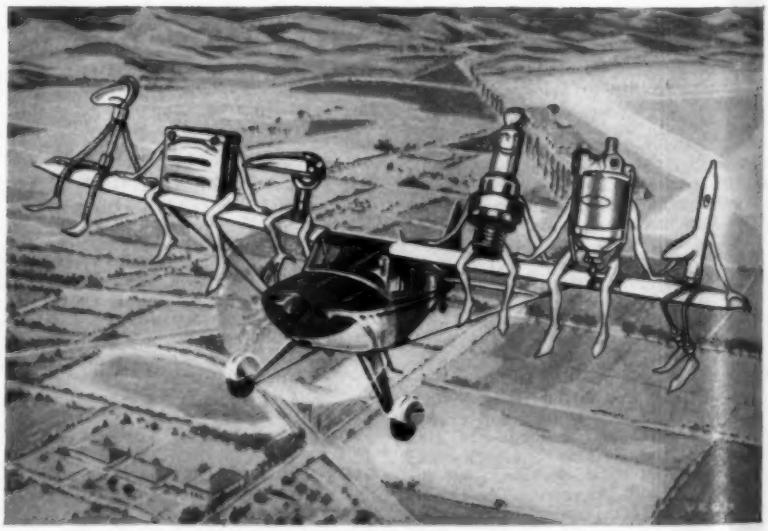

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When and Where

JANUARY

National symposium on electronics reliability and quality control, Hotel Statler, Washington, D.C., Jan. 6-8.

Proximity warning indicator—collision avoidance system meeting, Hollywood Roosevelt Hotel, Los Angeles, Jan. 9-10.

Annual meeting and engineering display, SAE, Sheraton-Cadillac and Statler Hotels, Detroit, Jan. 13-17.

Yankee Instrument Fair & Symposium, Instrument Society of America, Hotel Bradford, Boston, Jan. 14-15.

Aviation Institute for Commercial Carriers & Business Pilots, U. of Calif., Los Angeles, Jan. 20-Feb. 7.

Miami International Air Show and Exposition, Master Field, Opa-Locka, Fla., Jan. 22-26.

IAS annual meeting, Sheraton-Astor Hotel, New York, Jan. 27-31.

Annual Midwest Welding Conference, Armour Research Foundation, American Welding Society, Chicago, Jan. 29-30.

American Astronautical Society, annual meeting, Engineering Societies Bldg., New York, Jan. 29-31.

Southern California Meter Assn., annual instrument short course, Los Angeles Harbor College, Wilmington, Calif., Jan. 30-31.

ASEE-College-Industry conference, University of Michigan, Ann Arbor, Mich., Jan. 30-31.

FEBRUARY

Industry-Service Symposium, flight control-panel integration, Biltmore Hotel, Dayton, Ohio, Feb. 3-4.

Reinforced Plastics Div. Conf., Society of the Plastics Industry, Edgewater Beach Hotel, Chicago, Feb. 4-6.

MARCH

ASME Gas Turbine Power Div., conference and exhibit, Shoreham Hotel, Washington, D.C., March 2-6.

National Conference on Aviation Education, National Aviation Education Council, Mayflower Hotel, Washington, D.C., March 13-14.

Nuclear Congress, International Amphitheater, Chicago, March 16-22.

ARS-ASME joint aviation conf., Statler-Hilton Hotel, Dallas, March 17-20.

Interservice and Industry Symposium on Guided Missiles Training Equipment (secret clearance only), Naval Ordnance Lab., Silver Spring, Md., March 18-19.

IRE national convention and radio engineering show, Waldorf-Astoria Hotel, New York Coliseum, March 24-27.

International Instrument Show, Caxton Hall, London, March 24-29.

APRIL

ASME div. of instruments and regulators conference, University of Delaware, Newark, Del., April 1-3.

ASME maintenance and plant engineering conference, Penn-Sheraton Hotel, Pittsburgh, Pa., April 14-15.

ASME design engineering conference, International Amphitheater, Chicago, April 14-17.

American Helicopter Society, annual national forum, Sheraton-Park Hotel, Washington, D.C., April 16-19.

SPOTLIGHT

Fact that Air Force has affixed the designation YF-108 to its long range interceptor project would seem to assure a prototype order for North American, although no official papers have come through yet.

The McDonnell Voodoo that recently established a world's speed record of 1,207.6 mph carried the designation JF-101A—the J indicating a bailed aircraft. First bailed to McDonnell, the record aircraft was on bailment to Pratt & Whitney at the time of the speed runs.

Curtiss-Wright's continuing development of dual-cycle engines (AMERICAN AVIATION, Dec. 2, p. 16) reportedly includes possibility of mating the 20,000-lbs.-plus-thrust Orenda Iroquois with a ramjet. Encouragement for continued development of this type power is said to come from several airframe manufacturers.

About a third of the stainless steel sandwich construction now going into the Convair B-58 is fabricated by Rohr Aircraft Corp., which also supplies the Hustler's power packages.

Measurement of radioactivity will become a duty of CAA personnel at airports. Training for the program will be done at CAA's Aeronautical Center, Oklahoma City. Present plans are for two-week courses.

Both Lockheed's California division and North American's Los Angeles division now are actively soliciting the same type subcontracts they formerly awarded to others.

Boeing is building a 45-ft. long mockup section of a 707 fuselage with Sabena's interior decor for display at the 1958 Brussels International Exposition.

There is considerable speculation over the "second" generation of bombers to follow the B-58. First generation to succeed present aircraft will be the chemically-fueled bomber. Best guess for second: a near-space manned boost-glide aircraft.

The 99th Bombardment Wing of SAC, Westover AFB, Mass., this month completed the 100,000th flight hour on its Boeing B-52s without sending any of the Pratt & Whitney J57 engines off base for overhaul. The B-52 wing, activated Dec. 8, 1956, now has 45 aircraft and has completed a full year without serious accident. All overhaul to date has been done on the base.

A new infrared search set for use with fire control systems is undergoing flight evaluation at Wright-Patterson AFB. Identified as the AN/AAG-5, it is being considered for use with Century series of fighters. Canadians are said to be interested in obtaining similar equipment for their latest high-performance aircraft.

Lockheed's JetStar 10-passenger utility jet aircraft has been turned over to Air Force for evaluation following 100 hours of flight tests.

Northrop has completed its production and modification of the famous F-89 series of all-weather interceptors. First F-89 flew in 1948. Last F-89 modified to F configuration left the Hawthorne, Calif., plant this month, will be delivered from Palmdale in March.

Remington Rand Univac, a division of Sperry Rand, has received a $700,000 contract from Air Force for systems engineering and management services in connection with the BADGE program (base air defense ground environment). BADGE, reportedly a scaled-down version of the SAGE system for base protection, is to be implemented in NATO countries.

Fourteen of the 30 SAGE direction centers are under construction, the latest report on implementation says. Completion of current work is expected about July, with remaining centers to be completed near the end of 1958.

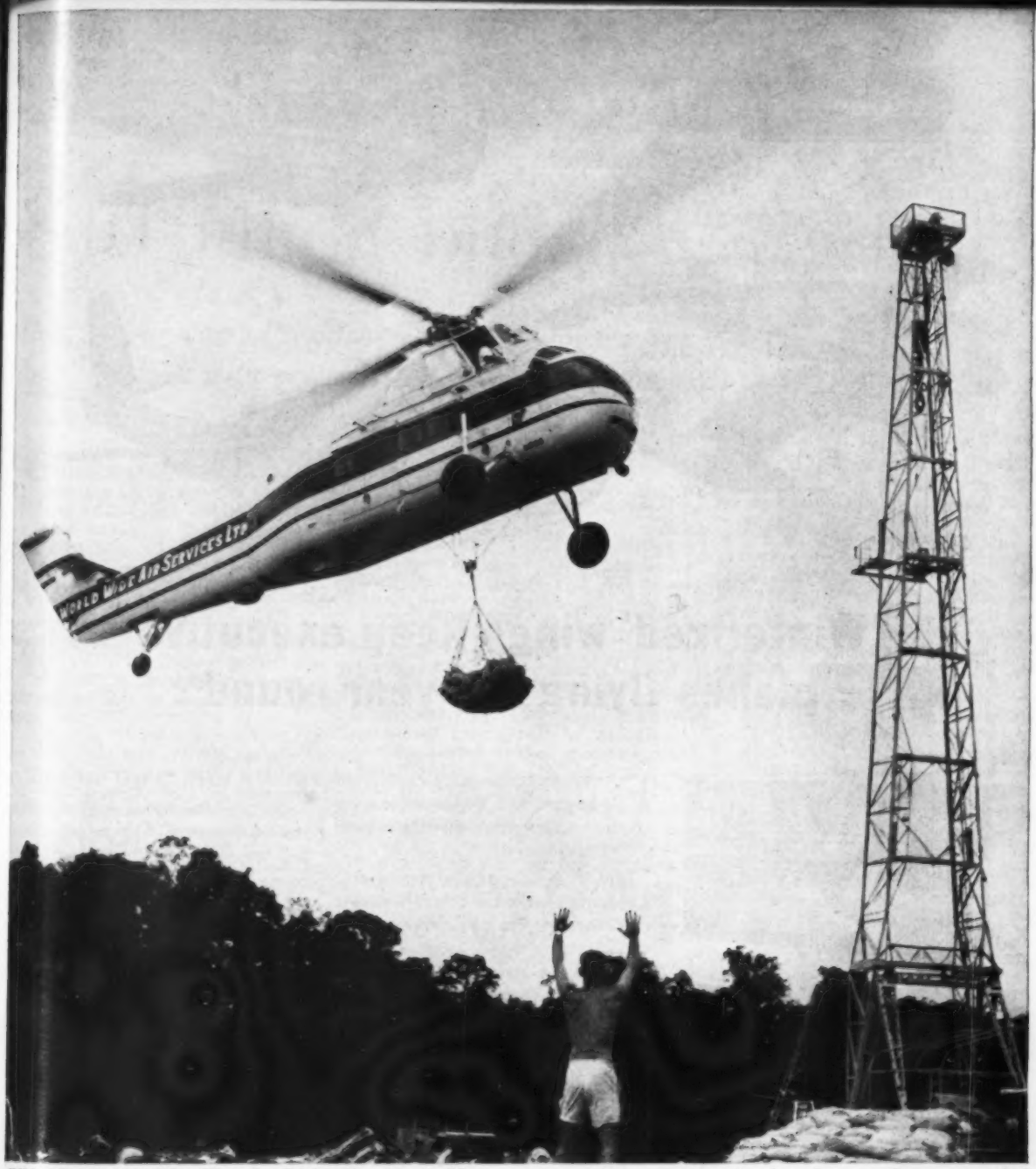
AFTER 1000 FLYING HOURS—The lead aircraft in this formation of five Army H-37As (Sikorsky S-56s) over Fort Rucker, Ala., completed 1000 hours of accelerated test flying within six months after delivery, a unique record for helicopters.

A new Army command, the Transportation Aircraft Test and Support Activity, conducted the unprecedented testing program. The big H-37A was the command's first assignment in a program designed to develop a system to provide engineering data.

AROUND THE WORLD WITH SIKORSKY HELICOPTERS

OVER ANTARCTIC ICE—A Navy HO4S (Sikorsky S-55) hovers over the Coast Guard icebreaker *Northwind* in the Antarctic, supporting U. S. participation in the activities of the International Geophysical Year. Sikorsky helicopters are vital to the exploration and development of hard-to-reach areas the world over.

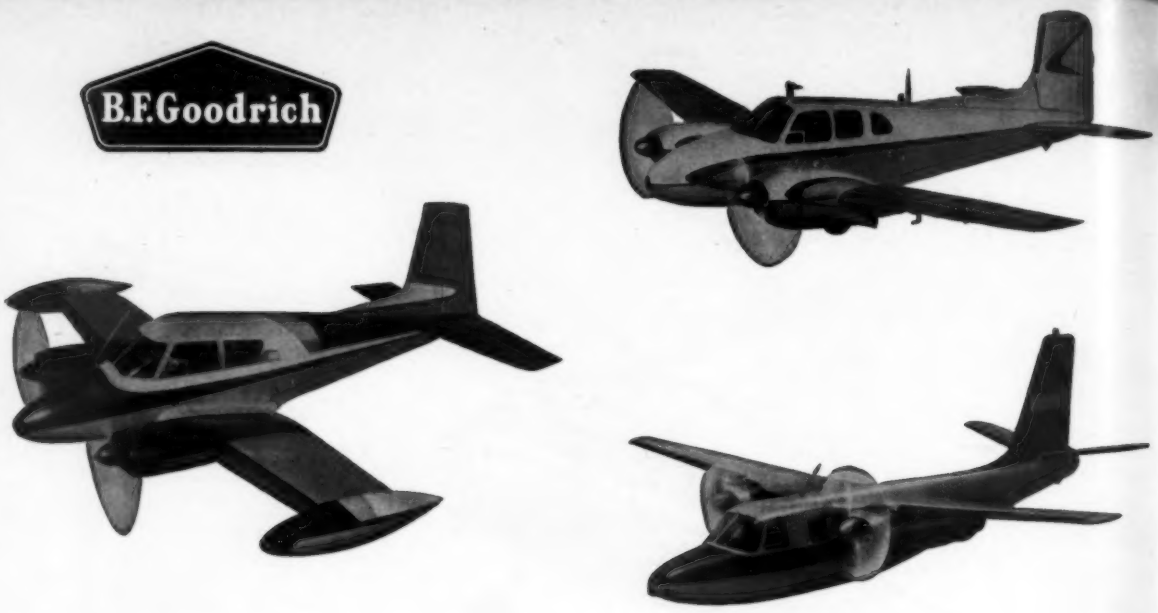
OVER THE BEACHHEAD—A Marine Corps HUS (Sikorsky S-58) takes off from the carrier Leyte during exercises in the Caribbean. The HUS normally carries up to 12 passengers, or even more for short distances. Current Marine Corps tactics emphasize vertical envelopment of enemy areas using many transport helicopters.



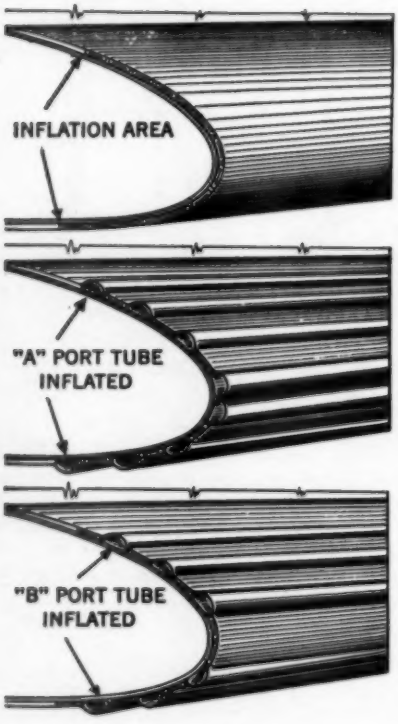
JUNGLE OIL AIRLIFT—Sikorsky S-58 helicopters in New Guinea have pioneered a far-reaching new technique in oil drilling operations. With loads averaging about 4000 pounds, they recently flew all personnel, construction equipment, drilling rigs, and supplies to several jungle drilling sites. Costly, time-consuming road construction was not necessary, and only a few months were needed to do the entire rig emplacement job by S-58. It is estimated 18 months would have been required if ordinary ground transportation had been used. Above, an S-58 lands supplies at a drill rig which itself was flown to the site in sections by S-58.

SIKORSKY AIRCRAFT
STRATFORD, CONNECTICUT
One of the Divisions of United Aircraft Corporation

B.F.Goodrich



'Winterized' wings keep executive planes flying the year round



FLYING BUSINESSMEN can't *afford* to be grounded. Delays due to icing conditions can mean a meeting missed, a contract lost.

But B. F. Goodrich pneumatic De-Icers eliminate delays—enable executives to plan and complete trips they otherwise wouldn't even schedule. With B. F. Goodrich De-Icers, ice removal is a "snap"! Small tubes inside the De-Icer boot inflate and deflate alternately to crack ice as it forms (see drawings at left). The ice breaks off cleanly, washes away in the air stream. The operating cycle is completely automatic.

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AMERICAN AVIATION

WORLD'S LARGEST AVIATION PUBLISHERS

$40-billion budget . . .

That's how much President will ask Congress for defense for fiscal '59, with emphasis on missiles, antisubmarine devices

by Elizabeth Oswald

PRESIDENT EISENHOWER will ask Congress for about $40 billion in new appropriations to run the Defense Department in the fiscal year that starts next July 1.

Target date for presentation of the new budget is about Jan. 13. Details won't be unwrapped until the message goes to Capitol Hill. The record peacetime request for funds is approximately $2 billion higher than an originally planned budget target of $38 billion in new appropriations for fiscal year 1959.

The net increase is intended, for the most part, to accelerate the missiles program and spur what the Navy calls the development of "antisubmarine warfare" devices. Actually the increase dollar-wise will be somewhat larger than the $2 billion figure.

The Pentagon's budget-makers have been able to hold the increase down solely because of cutbacks in relatively low priority programs and operations. In other words, the increases in some programs, notably in the area of missiles, research and development, dispersal of SAC bases and in wages for scientific and technical personnel, total more than $2 billion.

However, cutbacks in other programs—principally in the closing of bases and installations and changes in force levels bring the figures down to the net $2-billion budget boost.

Spending to rise sharply

Actual expenditures will also climb in the fiscal year ahead, although not as fast as obligations. Current "ball-park" estimates indicate a fiscal 1958 spending rate of about $39 billion, as compared with a planned ceiling of $38 billion. First-half spending rates have already pushed the ceiling to $38.4 billion.

Present indications are that spending will increase an additional $600 million in the six-month period which starts Jan. 1, 1958, and ends next June 30.

There have been fewer advance looks at the budget program for the next fiscal year than usual. This is accounted for in part by the uncertainties created in the closing days of budget-making by: (1) the arrival of Sputniks I and II; (2) the decision to produce both the Army's Jupiter and the Air Force Thor; (3) the plan to create an operating agency to handle "special weapons" in the Office of Secretary of Defense and (4) the uncertainties created by Congressional investigations as to the U.S. progress in science and technology and more particularly in missile art.

As nearly as is known now, the Air Force will seek $18 billion in new obligatory authority on Capitol Hill. This compares with $16.84 billion appropriated by the Congress in fiscal 1958. The figures themselves mean little, according to informed sources, because of the decision to take MATS out of the normal budget process and to finance its operation on the basis of an industrial fund.

Most of the AF increase will be for missiles, with aircraft programs held to what is now considered an efficient replacement rate. In this area, there are a number of major uncertainties. These include:

(1) *Whether the budget-makers* will accept the SAC recommendation to buy B-52s beyond the presently contemplated 11 wings.

(2) *The rate at which* dispersal of Strategic Air Command bases will be authorized. President Eisenhower has said that dispersal would be accelerated but there is a tight lid on either the cost of or the rate at which the dispersal program will be authorized.

(3) *The training program.* Under new training concepts, orders for trainers have been sharply curtailed. However, there is pressure from Capitol Hill to maintain proficiency flying and to provide the skills that will be needed when and if missiles are made obsolete, at least partially, by manned space vehicles.

(4) *Whether a decision* is made in the year ahead to push the Titan program.

Defense targets for FY '58—military functions only

New appropriations	**$40 billion (appx.)**
Expenditures	**$40 billion**
Missile program	**$6 billion**
Planned R&D increases	?
Conventional weapons cutbacks	?
SAC dispersal acceleration	?
Cordiner Committee increases	?

What Navy can expect

In the case of the Navy, the new budget will place increased emphasis on antisubmarine weapons. These include manned aircraft and helicopters, as well as electronic detection devices. The Navy also expects to ask for and win an acceleration of the Polaris program and with it the money to start work on the submarine intended to carry Polaris.

Navy officers indicate that a large part of the planned $2-billion increase in new obligatory authority will be used, in the case of the Navy in the area of antisubmarine warfare.

One of the major and, as yet, unclear areas, involves attack carriers. The question is whether the Navy will win an authorization for a second atomic-powered carrier or whether President Eisenhower and the Congress will take a wait-and-see attitude, preferring to delay the decision until after the first atomic-powered carrier is further along at Newport News Shipbuilding Corp.

Indications are that new money for the Navy will in fiscal 1959 total about $12 billion, give or take about $100 million, despite the current uncertainties.

As for the Army, which has been living on unobligated carryovers of hardware funds for the last four years, it is a virtual certainty that the budget will total about $8.4 billion—if only to provide the money needed to buy hardware, since most of the carryovers from former years are, in budget-maker parlance, now "washed out." Balance of the budget is for operation of the Office of Secretary of Defense which

Aircraft cutbacks hit material suppliers

Materials suppliers have been hit hard by the cutbacks in the Defense Department economy campaign. Problems have been aggravated by the shift in emphasis from aircraft to missiles.

The Titanium Producers and Fabricators Industry Advisory Committee has asked for help from the Business and Defense Services Administration in coping with the problem.

Production of titanium mill products has slumped from 2,248 tons in the first quarter of 1957 to 1,105 tons in the third quarter. Missiles are not a substitute for aircraft as consumers of materials because at the present time the largest part of missile money goes for research and development of prototypes, not big materials users.

The situation is worrying the Office of Defense Mobilization for many reasons including the fact that the government is liable for excess materials which the market can't absorb, under agreements executed when materials expansion was required.

last year received $704 million in new appropriations—a figure which has gone up steadily over the last five years and which may again be expected to increase.

Actually, budget-makers are warning that the figures which go to Capitol Hill are only a single step in the long process of budget-making and funding of defense programs. As such, they must be considered a "guesstimate" rather than any firm program which will stand over the 18-months period involved.

Some decisions yet to be made

Guessing is even more of a difficult operation this year than normally because of the rapid strides now being made in the development of missiles—and the major and as yet unmade decisions which Defense Secretary McElroy, the National Security Council and President Eisenhower can be expected to face over the 18 months ahead.

Some decisions still to be made include:

(1) *The percentage of the budget* which should be devoted to combat readiness as compared with the amount that should be spent for the development of new and advanced weapons.

(2) *The creation of a special agency* at Office of Secretary of Defense level to handle long-range research and development of new and advanced weapon systems beyond the current crop of ballistic missiles and satellites. Here a matter of funding is involved. Will the funds be taken from the Services or will the new agency when and if created be financed out of OSD funds?

(3) *Will the Administration* ask for and will the Congress enact any major part of the recommendations of the Cordiner Committee relating to pay of scientists and technicians, both of the civilian and military variety?

In addition to the decisions there are the normal hazards associated with the budget process which involves forecasting what may happen in the 18 months ahead. These hazards include:

(1) *The sharp increase* in the cost of labor and materials which has continued over the last four years.

(2) *Actions by the Congress* including riders which are frequently included in the Appropriations Act.

(3) *Reprogramming* by the Defense Department, the Army, Navy and the Air Force, by which money is frequently taken out of one account and transferred to another—when one program is cancelled and another started.

(4) *Apportionment of funds* by the Bureau of the Budget which in effect determines whether the Services may spend the funds appropriated by the Congress and at what rate.

E. C. Wells, Boeing, elected president of IAS

Edward C. Wells, vice president-engineering at Boeing Airplane Co., has been elected president of the Institute of Aeronautical Sciences and will take office at the organization's Honors Night dinner Jan. 28. He succeeds Mundy I. Peale, president of Republic Aviation Corp.

To be installed as 1958 vice presidents are Neil Burgess, manager of J79 project at General Electric; Benjamin W. Chidlaw, vice president and director at Thompson Products, Inc.; L. Eugene Root, vice president and general manager at Lockheed Missiles Systems Division; H. Guyford Stever, professor of aeronautical engineering and associate dean at Massachusetts Institute of Technology school of engineering, and Treasurer R. Dixon Spaes, aviation consultant.

Navy considers Temco's TT-1 jet trainer

Navy is considering advanced versions of the Temco TT-1 jet primary trainer as a Navy basic trainer. Navy's interest stems from the economy of the proposal.

Temco president Robert McCulloch said the company has included a "substantial" amount of equipment, normally supplied as government-furnished equipment, in the unit cost.

Grumman Tiger gets infrared Sidewinder armament

GRUMMAN F11F-1 TIGER recently completed demonstrations proving its capabilities to launch the Navy's Sidewinder infrared-homing air-to-air missile. Tests were made in all flight conditions.

CAA Aeronautical center shifts to new Oklahoma City facilities

by William O'Donnell

CIVIL AERONAUTICS ADMINISTRATION'S Aeronautical Center at Oklahoma City is moving into new permanent structures at Will Rogers Field that will give CAA more efficient quarters for servicing its widespread activities and training its specialists.

The center is charged with responsibility of keeping CAA's scattered personnel and equipment up to date and in top operating condition.

Before the new quarters were started, the Aeronautical Center had operated since 1946 from a colony of run-down temporary buildings evacuated by Army Air Corps following the war.

The Center is responsible for conducting the specialized standardization training required by CAA, providing central warehousing and supply services, and for maintaining CAA equipment including its fleet of aircraft.

The new facilities are the property of the Oklahoma City Airport Trust, which financed the $13.5-million program through sale of self-liquidating bonds. Under terms of the lease (25 years and 25 years option) to CAA, the government will pay rent in an amount that will amortize the construction cost over a period of 25 years. At that time, the Airport Trust will own the buildings outright and the "rent" will be reduced to about half of that for the first 25 years.

One of the first buildings of the new "University of the Air" campus to be occupied was the Air Traffic Control Laboratory. This 40,000-sq.-ft. structure contains facilities for basic and refresher training of control tower operators for both civil and military aviation and foreign students. The building has seven mock control towers and air route control centers.

Other buildings include:

Warehouse and Shop Building—651,000 sq. ft. for storage of parts and supplied for CAA installations all over the world.

Headquarters Building—161,000 sq. ft., three floors and partial basement to house administrative offices, cafeteria, auditorium, clinic, post office, communications center.

Air Navigation Facilities Lab—69,100 sq. ft., two stories, including roof-top classroom for laboratory exercises which must be held out doors, and a shop for preparing training aids.

Flight Operations and Airworthiness Lab—39,900 sq. ft., contains classrooms and laboratories for basic and refresher training of CAA personnel and pilots who certify airplanes.

Maintenance and Operations Hangar—88,000 sq. ft., has clear height of 42 ft., span of 176 ft.

Flight Inspection Lab—9,700 sq. ft. for training of personnel who check air navigation facilities.

Radar Antenna Laboratory—2,870 sq. ft. contains "electrically-dead" wall for antenna testing.

Aircraft simulator building—Contains classrooms, Dehmel simulator of the Boeing 377 Stratocruiser and a Link jet instrument trainer. In August the CAA will install a Curtiss-Wright Boeing 707 simulator—the first unit built by CW. Cost of the 707 simulator is reported as $750,000.

Ground-breaking for the new permanent structures was held Feb. 13 with Undersecretary of Commerce for Transportation, Louis S. Rothschild, doing the spadework.

The Center has about 1,200 employes permanently stationed there. Some 8,000 students are accommodated a year in the training activity. Length of training courses vary from one week to several months.

ARTIST'S CONCEPT of how Aeronautical Center will appear when completed. Will Rogers Field is to east. Area in foreground now contains run-down barracks which house most of the Center. Adjacent land has been reserved for future expansion.

Electronics business soars to $7 billion for 1957

The electronics industry 1958 business will exceed the record volume of 1957, according to the Electronics Industry Association.

Factory sales of electronic products rose from $5.9 billion to more than $7 billion this year and an increase of from 8% to 10% is expected for 1958. Military procurement led the year's increase, rising from $2.7 billion to nearly $3.5 billion. The EIA estimates that 23% of military procurement dollars are going to the electronics industry.

Martin expects orders for 50-100 SeaMasters

The Martin Co. expects an order for between 50 and 100 four-jet SeaMaster flying boats in fiscal 1959, if the new test program beginning this month is successful.

The YP6M SeaMaster prototype with a new tail assembly has undergone engine runups, water hull tests and other preflight operations. Another plane is undergoing tail tests and several others are in various stages of hull dockings. Martin's present contract calls for 24 SeaMasters.

The company expects to increase employment from the present 30,000 to about 32,000 by the end of 1957.

At Baltimore, attrition is taking care of current decreases. The Orlando, Fla., plant is expected to add 800 employes. Denver is reaching for 5,000 employes.

Allen criticizes politics in Defense contract awards

Defense business should be awarded entirely on a basis of merit and without regard to the effect of employment within a given congressional district, William M. Allen, Boeing Airplane Co. president, said in a recent speech.

"The American people and their chosen representatives must be made to realize that any pork-barrel influence in the award of defense business will diminish the quality of our weapons," he said.

Allen also attacked the Renegotiation Act "as it is being administered" as harmful to security. He insisted the act kills incentive.

Bell gets contract for H-13H rotorcraft

Bell Helicopter Corp. has received a follow-on contract worth several million dollars for its Army H-13H. The rotorcraft is engaged in an evaluation comparison with the Hiller H-23D at Fort Rucker, Ala. Completion of the program is slated for February.

FINANCIAL

Industry sales for '57 may eclipse 1956 figures

by Selig Altschul

WITH 1957 books closing, the aircraft industry, as a whole, may at least equal the postwar sales peak of $9.5 billion established for 1956. Earnings for the group, however, may be hard-pressed to match 1956 results.

A preliminary analysis of 15 leading airframe, engine and parts manufacturers for the first nine months of this year shows their sales at 34% higher than for the same 1956 period. Net incomes for these 15 companies were running but 15% ahead for the same period.

The second half of 1957 witnessed significant transitions resulting from outright cancellations, cutbacks and stretchouts, plus the compounding of problems stemming from payment limitations. All this will serve to slow down deliveries and sales during the last quarter of 1957. Disruption of earnings will surely follow in this process. Termination claims, where present, may alleviate some of the losses but when ultimately allowed can hardly hope to fill the gap caused by the drop in previously sustained production levels.

Overall industry sales for 1958 promise to surpass those for 1957. However, there will be radical shifts among the major elements in the broad group as to how the aircraft sales dollar will be divided. In any event, earnings for 1958 for the group are bucking too many headwinds to have any expectation of surpassing 1957 profits.

The industry pattern is becoming sharply more selective and is showing up in the sales and earnings figures of the separate companies. These divergences are evident in the accompanying table detailing earnings and dividend trends for 1957 and 1956 for individual companies.

Those in electronics fortunate

The handwriting has been on the Pentagon wall for more than two years. It stems from the guided missile gradually moving in to crowd the manned aircraft. While far from obsolete, manned aircraft are declining in relative dollar volume and numbers while missiles and weapon systems are constantly broadening. This trend hurts the airframe builder and his complex of satellite subcontractors depending on manned aircraft business.

Companies specializing in the broad spectrum of electronic controls and instruments will have more business. And these companies, for the most part, have been without any formal identification with the aircraft manufacturing industry. Many entrants in the field are also in other basic industries which they used as a springboard to become interested in electronics. They include companies in electrical equipment, automotive products, heating and ventilating devices and commercial radio and TV.

Airframe companies lacking strong entries in the electronic field entitling them to representation in major missile programs are obviously vulnerable and subject to a loss of considerable business. Moreover, there can be no assurance that the gain in missile bookings will outweigh the loss in manned aircraft volume.

The economic facts of life are now causing far-reaching shifts in plant facilities as specialized equipment necessary to the electronic arts are placed in service. Moreover, acquisition of smaller units along with consolidations and mergers may well be accelerated.

The military market, nevertheless, remains a large one regardless of its wider dispersal. Defense Dept. expenditures were previously expected to reach $38.5 billion for fiscal 1958 as compared with $38.4 billion in fiscal 1957. However, intensified procurement may bring supplementary appropriations and hence spending, thus exceeding the $38.5-billion mark for the year to end June 30, 1958. Tentative indications are that 1959 fiscal spending by the Defense Dept. may easily exceed $39.5 billion. Not all of these funds, however, are earmarked for aircraft and guided missiles.

Taking the industry's combined backlog plus the military's unobligated aviation procurement and available new appropriations, some $30 billion at June 30, 1957, remains to be expended from that period forward. This spells sustained high sales volume for more than two years without regard to any additional appropriations Congress may see fit to make.

The profit picture is something else again. Of the 21 companies shown in the accompanying table, 12 are estimated to show earnings at or below that of 1956 for 1957. The significant gains for 1957 in earnings are being recorded by General Dynamics, United Aircraft, McDonnell, North American and Boeing.

However, production programs for all of the airframe companies are changing rapidly. North American, for example, is expected to experience a sharp reduction in sales and earnings for 1958.

Progress payment reduction hurt

There can be no minimizing the effect of federal fiscal policies on the earnings position of the industry. Effective Sept. 1, 1957, progress payments to contractors on all fixed-price con-

Major aircraft companies earnings and dividends, calendar or fiscal years 1957 and 1956

(Per Common Share)

	Earnings		Dividends	
	1957(E)	1956	1957(I)	1956
Beech Aircraft Corp.	$4.05	$4.05	$1.20(S)	$1.14½
Bell Aircraft Corp.	1.60	2.21	1.00	1.25
Boeing Airplane Co.	5.00	4.82	1.00(S)	1.67
Cessna Aircraft Co.	5.05	5.75	1.40(S)	1.40
Chance Vought Aircraft Inc.	5.00	3.81	1.60	1.60
Curtiss-Wright Corp.	5.00	5.64	3.00	2.50
Douglas Aircraft Co., Inc.	8.85	8.96	4.00	4.00
Fairchild Engine & Airplane Corp.	0.25	0.64	None	0.25
Garrett Corp.	5.02(A)	5.13	2.00	2.00
General Dynamics Corp.	4.85	4.14	2.00	1.60
Grumman Aircraft Engineering Corp.	2.85	3.50	1.75	2.00(S)
Lockheed Aircraft Corp.	4.85	5.10	2.40(S)	2.40(S)
McDonnell Aircraft Corp.	6.34(A)	4.55	1.00(S)	0.50(S)
Martin Co.	3.25	3.73	1.60(S)	1.60(S)
North American Aviation Inc.	4.23(A)	3.59	2.00	2.00
Northrop Aircraft, Inc.	3.62(A)	3.28	1.60	1.60
Piper Aircraft Corp.	3.10	2.88	1.00(S)	1.00
Republic Aviation Corp.	3.85	5.01	2.00	2.00(S)
Rohr Aircraft Corp.	4.14(A)	3.49	1.40(S)	1.40
Solar Aircraft Co.	0.55(A)	1.82	1.00	1.00
United Aircraft Corp.	7.50	5.88	3.00(S)	2.50

Notes:

E—As estimated by Standard and Poor's.
A—Actual.
I—Indicated Rate.
S—Plus stock dividends.

tracts were cut by the Treasury to 70% from 75% previously. This necessitated additional borrowings but interest on these loans are not construed as an allowable cost. There is the hope that this added charge will be given consideration in the pricing processes and in renegotiation.

A hard blow, too, was the directive of Nov. 1 which put an end to the Government financing all costs under cost-plus-fixed-fee contracts. Contractors are now required to finance 20% of these charges themselves.

It is conceivable that after Jan. 15 next, when tax payments once again fill the Treasury balance, or if the debt limit should be breached, reductions in progress payments under the various types of contracts may be rescinded. In the meantime, the industry is submitting to a financial squeeze.

A combination of factors spells lower earnings for 1958. The interest expense, of course, will be a good deal higher due to substantial borrowings, both long- and short-term, made necessary by the reduction in Government progress payments. In 1958, development costs on the jet aircraft types is bound to be particularly heavy for a large segment of the industry and represented specifically by Lockheed, Douglas, Boeing, General Dynamics, Fairchild and Grumman.

Further, as the accelerated shift to missile work takes place, a greater percentage of total business may be placed in research and development, where profit margins under cost-plus-fixed-fee arrangements are smaller than fixed-price contracts. Moreover, for a number of companies, heavy depreciation charges will have to be absorbed as a result of the substantial capital improvement and expansion programs of recent years and still in progress.

New CAB accounting rule to take effect Jan. 1

CAB's new depreciation accounting rules, first proposed in April 1956, have been put in final form by the Board and will become effective Jan. 1, 1958.

Generally, the new regulation (Amendment No. 2 to Part 241) directs air carriers to use the so-called "straight-line" method of allocating total depreciation charges to annual accounting periods and also prescribes specific depreciation rates for certain classes of aircraft and related flight equipment.

CAB said the principal purpose of its new regulation is "to increase the effectiveness of the Board's prescribed system of accounts and reports by directly controlling the depreciation accounting practices of certificated air carriers." This would take the place of what CAB now considers to be "indirect control" over depreciation accounting practices.

NACA unveils mechanically adjustable thrust-reverser

Hot exhaust gases from jet engine are not affected by NACA's clamshell thrust reverser in full open position. Unit is mounted on jet engine tailpipe and is controlled by pilot from cockpit. NACA claims its device is first to be practically demonstrated.

Half-closed position of reverser diverts a portion of the engine's full-throttle thrust to the braking direction. When fully closed (below) reverser delivers 3,600 lbs. thrust in the reverse direction. Reverser is set through a hydraulic control.

THIS DOUBLE "clamshell" thrust reverser can be adjusted mechanically to provide instantaneous control of jet engine thrust in the air and on the ground. In-flight operation gives pilot an additional flight control. When used after landing it helps brake aircraft to a stop. Unit, developed at NACA's Ames Aeronautical Laboratory, is shown in full thrust, half thrust, and full closed positions. Harry J. Goett, chief of Ames Full Scale and Flight Research Division, inspects the installation on an F-94C testbed.

Standard hose then used a heavy rubber covering over two layers of

hose and, for the first time, allowed successful use of other materials, such

work in its development laboratory as a test agency for the materials to come after Teflon. Under direction of the

Engineering spells growth at Aeroquip

President Hurst reports record business for third straight year; 10-year sales up 1,092%

by Joseph S. Murphy

ON NOV. 25, 1957, Peter F. Hurst of Aeroquip Corp. penned his signature to the Jackson, Mich. firm's 18th annual report, writing into the record one of the aircraft industry's standout examples of company growth shaped by logical, basic engineering.

Hurst told stockholders that fiscal year ended September 30 was the most successful in the company's history. It saw peak levels in both sales and earnings. And it marked the third consecutive 12-month period in which Aeroquip set a new high in total business volume.

Some statistics: Net sales totaled $42,793,777—up 28% over last year. Fiscal '57 became the ninth year in succession that net earnings set a new record—net of $2,538,606 was up 40% for the year.

The $42.8 million sales represent almost seven times Aeroquip's peak wartime level! But this is explainable. Engineer Hurst only founded the company in 1940, and despite early successes in marketing new types of flexible hose lines, reusable fittings and self-sealing couplings, peak sales in the ensuing five years never reached $7 million.

But wartime sales were confined exclusively to military aircraft markets. Immediately after VJ-Day, Aeroquip expanded vigorously into non-military industrial fields to the extent that today's business is divided about equally —half aircraft, half industrial.

Paralleling this expansion, engineer Hurst broadened the company's product lines into such areas as specialized clamps and couplings, flexible joints for aircraft systems, hot air valves, cargo handling and tie-down equipment.

Hurst's report to stockholders illustrates a striking picture of Aeroquip growth during this postwar period.

Between 1948 and 1957 net sales jumped 1,092%. Pre-tax earnings, regarded by many as the most realistic measure of a management's ability, have advanced 1,183%.

Despite spiralling costs throughout this decade, management at Aeroquip continued to improve operating efficiency. In fiscal 1948, 11.9% of net sales was realized as earnings before Federal income taxes. Ten years later, in the face of more difficult, competitive conditions, this figure improved to 12.8%.

During this same period, net income has increased more than tenfold. Gain in stockholders' equity over the stretch from the end of fiscal 1948 to the close of 1957 has been an impressive 1,162%.

The big question: What is behind this performance record—the "Aeroquip approach" to business that has made these statistics possible? To find this answer, AMERICAN AVIATION recently interviewed president Hurst and B. A. Main, Jr., vice president-engineering.

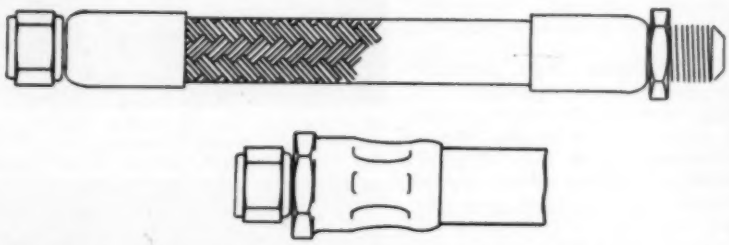
Hurst's explanation was simple and straightforward, "a strong emphasis on logical, basic engineering." As the best current example of this "engineering-minded" approach, he points to the new 15,000 sq. ft. engineering center completed in August at Aeroquip's Jackson, Mich. headquarters.

He also stressed the importance of "every-day engineering activity," close coordination of this activity with sales and service engineers and, no less important, Aeroquip's basic policy of reinvesting an appreciable percentage of earnings in development.

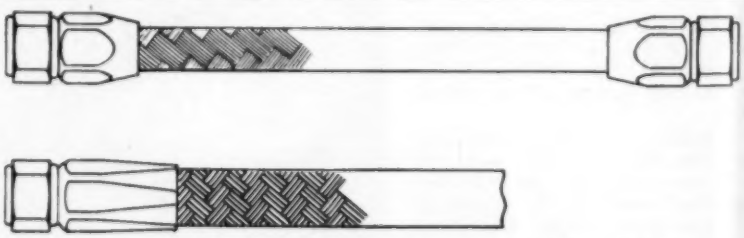
This orderly process of development engineering, as B. A. Main explains it, began in 1940 with the original Aeroquip concept of replacing large stocks of factory-assembled hose lines with small stocks of bulk hose and reusable fittings. Success meant an answer to one of the Air Force's biggest logistics headaches at that time.

In its first try, Aeroquip came up with a hose and fitting combination that not only cured this headache but supplied several additional benefits. The new hose line weighed approximately half that of earlier hose lines with swaged fittings. And the Aeroquip design permitted higher operating pressures.

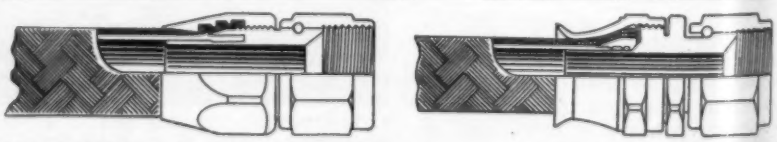
Design milestones at Aeroquip



AEROQUIP's first venture into hose and reusable fittings produced assembly (top) that weighed same as hose and single swaged fitting (bottom).



CHANGE to "Little Gem" fitting and lightweight hose (top) produced assembly equal in weight to predecessor model with single fitting (below).



MILESTONES in Aeroquip development program were the introduction in late 1940s of "Little Gem" lip-seal fitting (left) and that of "Super Gem" (right) in 1955. Latter has been in volume production for use with Teflon hose for two years.

Standard hose then used a heavy rubber covering over two layers of cotton braid and was rated for 800-psi service. Aeroquip substituted a third cotton braid, dispensed with the rubber cover and attained a 1,000-psi operating pressure.

Next step was the development in 1942 of the first single-wire braided hose for aircraft with the immediate result that system operating pressures could be raised to 1,500 psi. To the airframe engineer this meant reduced volumetric expansion of hose which spelled safer braking for higher aircraft landing speeds.

In 1943 the company set up its first laboratory equipment for testing fire resistance of hose lines. With this early start, Aeroquip worked closely with CAA, the military services, aircraft and engine manufacturers to set up the standard fire resistance and fireproof specifications in use today.

A year later Aeroquip developed the Hydrauliscope—an electronic laboratory instrument designed for use by hydraulic engineers. Its purpose: to accurately measure the pressure patterns existing in aircraft fluid systems.

In the short span of one year, several airframe manufacturers were using it to correlate system demands against possibilities obtainable in design of system components. Eventually, wide-scale use of the unit led to the standard pressure pattern accomplished with an impulse test machine which still is the criterion for qualifying components used in aircraft hydraulic systems.

Until 1945, flex hose lines were used for hydraulics systems only in sizes up to −12 (¾ in.). That same year Aeroquip made the first actual installation of hose in aircraft powerplants for fuel, oil pneumatics and coolants, eventually leading to hose diameter up through −48 (3 in.).

This marked a major advance in engine fire safety, Main points out. Engine plumbing had been largely aluminum tubing connected by rubber hose with hose clamps. Use of flex hose lines did away with rigid tubing fatigue problems, eliminated leakage points and resultant fire hazards, and improved fire resistance.

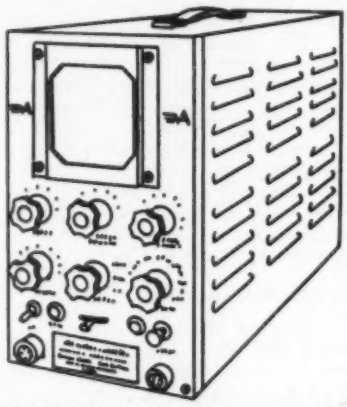
During the late 1940's, the first of the supersonic aircraft series were on the drawing boards and ever increasing operating temperatures (250° F and above) began to dictate need for better hose fittings than the "compression" type then in use. Reason: this fitting compressed the whole carcass of hose, the rubber would weaken the grip of the fitting as it took a compression set, and would flow from the compression area.

Aeroquip supplied its answer with the "Little Gem" hose fitting, a "lip-seal" fitting, one that grasps only the reinforcement of the hose and uses the inner tube as a seal free of compression and the resultant deterioration.

This development permitted use of higher temperature rubber in the hose and, for the first time, allowed successful use of other materials, such as silicone, in hose inner liners.

With the "Little Gem" Aeroquip again found it possible to reduce overall hose line weight and reduce outside diameter for the same ID.

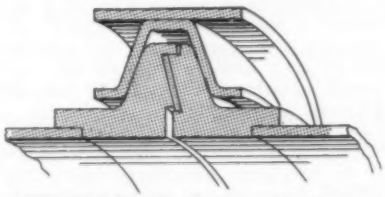
Most recent advance in the fitting field was the introduction late in 1955 of Aeroquip's "Super Gem," an improvement over the earlier "Little Gem" tailored to the specific needs of flexible hose with a Teflon inner liner.



AEROQUIP's Hydrauliscope, an electronic instrument for hydraulics engineers.

After two years of large-scale production, Aeroquip officials report a trouble-free record. On the roster of current military installations are the Convair F-102A and B-58 supersonic aircraft, Lockheed T2V trainer, Pratt & Whitney J57 and General Electric J79 jet engines, and the Vertol H-21 helicopter, to name but a few.

Principal design change in the "Super Gem" over the earlier lip-seal fitting was use of a separate insert or "olive" having ridges on its inside diameter to insure a permanent lip seal. It was arranged so as to abut against the nipple facing upon assembly, thereby forming a metal-to-metal seal.



NEWEST ITEM in five-stage development at Marman is this Conoseal joint.

Since the unveiling of the "Super Gem" Aeroquip engineers added another important advance to the design of flexible hose with the perfection of a "spiral wrap" process of reinforcing high-pressure Teflon hose. By substituting two wraps of stainless steel wire for the conventional inner braid, they found that failures experienced at the crossovers in braiding could be sidestepped.

What next? Aeroquip is now at work in its development laboratory as a test agency for the materials to come after Teflon. Under direction of the Materials Laboratory at USAF's Wright Air Development Center, Aeroquip has been working at the job of designing and testing fittings compatible with du Pont's Viton A.

This new rubbery compound, being produced in hose form for the project by The B. F. Goodrich Co., is being explored as a possible answer to restoring the "flexibility" to flexible hose lines. It is directed, however, at only the larger hose diameter range where such harder materials as Teflon now limit the bending qualities of hose.

The company has followed a similar design improvement trend throughout its product line. Its first self-sealing coupling was designed to eliminate the space between valves so that no air would be trapped in an aircraft fluid system when the coupling was connected. As soon as "O" ring seals became available, they were added to the couplings to improve sealing characteristics.

A new design now being introduced connects and disconnects faster than all previous Aeroquip models and adds the foolproof feature of snapping apart automatically when not fully connected and not locked upon connection. It is rated for 3,000-psi systems and temperatures up to 275°F.

At Aeroquip's Marman Division (acquired as Marman Products Co. in 1955) product improvement engineering has followed a similar pattern in development of universal joints, in-line check valves for duct systems and tubing joints.

Newest Marman universal joints feature stress-free construction for the bellows, yet are lighter in weight and have a lower pressure drop than four predecessor models it designed.

Its most advanced check valve is a packaged unit for 160 psi operating pressures, 500°F temperatures, and is rated to handle 2,700 lbs. of air per minute.

Marman's Conoseal tube joint, fifth in a series of developments, is the all-metal type in aluminum and stainless. It takes axial deflection up to 1/16 in., operating pressures to 6,000 psi and temperatures from −300° to 1,800°F, and is rated for high pressure applications in present or future aircraft and missiles.

The General Logistics Division, acquired by Aeroquip in 1956, produces cargo handling tie-down equipment. The basic product, a "Weblock" buckle, holds fast without backslip when the webbing is pulled tight. It releases instantly when pressed with a finger.

Recently General Logistics brought out a new ratchet tie-down for 5,000 pounds rated strength which incorporates the features of the weblock and also provides a miniature winch to take up to 4 feet of slack in the webbing, and will tighten to a load of 500 pounds.

Distributor parts sales may hit $75 million for 1957

by Lois C. Philmus

WHAT IMPACT does the distributor have on aircraft parts and accessory sales? Absence of official statistics has caused a great deal of guesstimating in recent years. But Aviation Distributors & Manufacturers Assn., having conducted a large-scale survey, is ready to replace guesses with facts. And the facts are impressive:

Annual sales of 27 of the 38 distributor members of ADMA reporting to date total a whopping $53,147,610. And when the final report is completed total sales may pass $75 million.

The 27 distributors had better than a three-time turnover in inventory, Tom Fernley, ADMA executive director, revealed. Customers were supplied from inventories totaling $12,898,296.

Each of the reporting distributors stock an average of 21,668 items from about 71 manufacturers. In toto, with duplications included, Fernley found, the 27 distributors represent 1,774 firms and carry 498,364 items.

A total of 461,320 sq. ft. of warehouse space is provided by the survey participants, averaging 6,234 sq. ft. per distributor location. An average of 39,989 sq. ft. per distributor is provided for service only.

Total employment of the 27 distributors, exclusive of service, is 1,530. Fourteen distributors reported 1,683 service employes for an overall work force of 3,213. Territorial coverage is provided by 181 traveling salesmen and 154 "inside" sales personnel.

Making all these impressive figures possible during the past year were a total of 24,201 customers (with some overlaps and duplications). The 27 distributors average 931 customers per distributor or 327 customers per warehouse location.

"This all adds up," Fernley said in his preliminary report, "to a tremendous saving for the manufacturer —no inventory investment in strategic locations, no salesmen to pay, no warehouse and office personnel, no small accounts receivable. And, furthermore, the customer gets many items in one order, writes one check, contacts one source, receives prompt service, does not have to maintain an excessive inventory."

Customers can help

At last month's ADMA meeting in Detroit, the membership heard for the first time—not what distributors and manufacturers have to do for the customer—but what the customer can do for them.

The business aircraft operator, in his own interest, said E. Tilson Peabody, air transport director of General Motors Corp., should take "all reasonable and honest steps to keep his suppliers strong and efficient."

"Conversely," Peabody added, "he should not contribute to the perpetuation of selfish, inefficient or arrogant suppliers who are parasitically inclined."

The business aircraft operator is entirely dependent upon his suppliers, Peabody said. The operator's ability to serve his company with safe, comfortable, convenient and dependable air transport depends upon the supplier.

He urged ADMA to look critically at the need for the customer assisting the supplier to become efficient and economically sound. "Sales effort in this direction could be well directed," he declared, "for I am sure there are many customers who count each discount as a personal victory. This same customer demands maximum service from his base operator on parts he purchased at dealer costs."

Cooperation a must

Scoring this practice, Peabody urged that the business aircraft operator select a supplier for any particular product or service and then "work with him for mutual profit."

Stressing the aim of mutual profit, the GM executive noted it can only be attained by mutual understanding of each other's problems. "The customer must inform the supplier of the estimated or actual rate of use of the item, of what technical information he requires, of his ability to maintain a stock pile and of his ability to service the item."

On the other side of the coin, the supplier must inform the customer of the "required lead-time for reorder, of the spare stock recommended and whether the supplier will carry it as a shelf item, of the availability of service and/or overhaul facilities and the time required to process through such a facility."

"Such information," Peabody asserted, "honestly and frankly exchanged, can lead to the best possible relationship between supplier and customer which will result in mutual planned progress."

Peabody cited the following advantages of a recent change whereby a manufacturer substituted distributor rather than direct sale to General Motors' transport section (the results of which "saved my company money"):

1. The distributor determined GM fleet's parts requirements and stocked to serve the section, considerably reducing GM's parts inventory.

2. Both the manufacturer and distributor encourage a local service facility to tool up to overhaul the part, with the former supplying necessary technical assistance. "Overhaul service improved remarkably," he noted, "with no transportation charges or expensive follow-up on deliveries."

3. Customer costs were reduced as parts reliability improved. The distributor was stronger and the manufacturer "got rid of a headache."

Peabody urged customers to advise manufacturers promptly when they fail to meet specifications or approved performance specifications. "It is little consolation to a business aircraft operator to learn that a part was made by a reputable manufacturer if the part does not even pass receiving inspection or fails in service at 40% of expected life," he said.

Peabody declared that the customer "owes it" to the supplier to let him know how his product is doing in service. However, he found, service reports are not easily obtained from business aircraft fleet operators.

Here the distributor can play a major effective role, Peabody suggested. Noting that it would be too costly and time-consuming for the manufacturer to locate case histories, he recommended that distributors and dealers assist in gathering service data for forwarding to the manufacturer.

"It is quite possible," he continued, "that this organization, along with other appropriate organizations might find it advantageous to establish and administer a system for collecting service (and failure) information for the good of all of us through product improvement."

Proposes code

Summing up, Peabody set forth the following suggested basic code of supplier relations:

1. *It is recognized that mutuality must govern the relationship between purchaser and supplier and the equities of both must be scrupulously balanced.* For the purchaser, he observed, this means procuring the right product, of the right quality and quantity, at the right time, at the right price and with the right service. For the supplier, this means assurance of fair treatment.

2. *It is recognized that the company may be judged entirely on the basis of the personal relationship developed in buyer-supplier contacts.*

3. *It is recognized that while the supplier relationship is a personal one, decisions must be made on an impersonal basis.* "First get all the facts," he advised, "then, weigh the facts and judge accordingly."

4. *It is recognized that the relationship between the purchaser and supplier must be a two-way corridor with the doors open at both ends.* "Each can be for the other a rich source of operating experience, technical ability and development ingenuity," Peabody said.

5. *It is recognized that a supplier group can never be static.* "The door is open to competent new suppliers.

Healthy sales reports, coupled with the effort to establish a code of ethics, are pointing the distributor business in the right direction. Through ADMA the distributors and manufacturers have come a long way toward mutual understanding.

Another Milestone in the Growth of the Missile Market

FIRST ANNUAL

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Bill,
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To MR
We're already scheduled there. Should help us a lot. Let's hope the competition isn't on its toes
Bill

MISSILE MARKET GUIDE is an EXTRA Mid-April issue of MISSILES AND ROCKETS

It will offer the first complete, classified listing of all manufacturers serving the missile market under 10 major heads and over a thousand sub-heads. All listings are free. Major breakdowns include such categories as MISSILE FRAME MANUFACTURERS, PROPULSION SYSTEMS, GROUND SUPPORT EQUIPMENT, GUIDANCE EQUIPMENT, TRACKING AND TELEMETERING EQUIPMENT, ETC. In addition to the classified section, there will be a missile catalog listing all of the different items going into a missile . . . an alphabetical list of all manufacturers of missile components, electronic equipment, hardware, etc. . . . a list by company of the people who specify and buy missile equipment . . . and many other features of interest.

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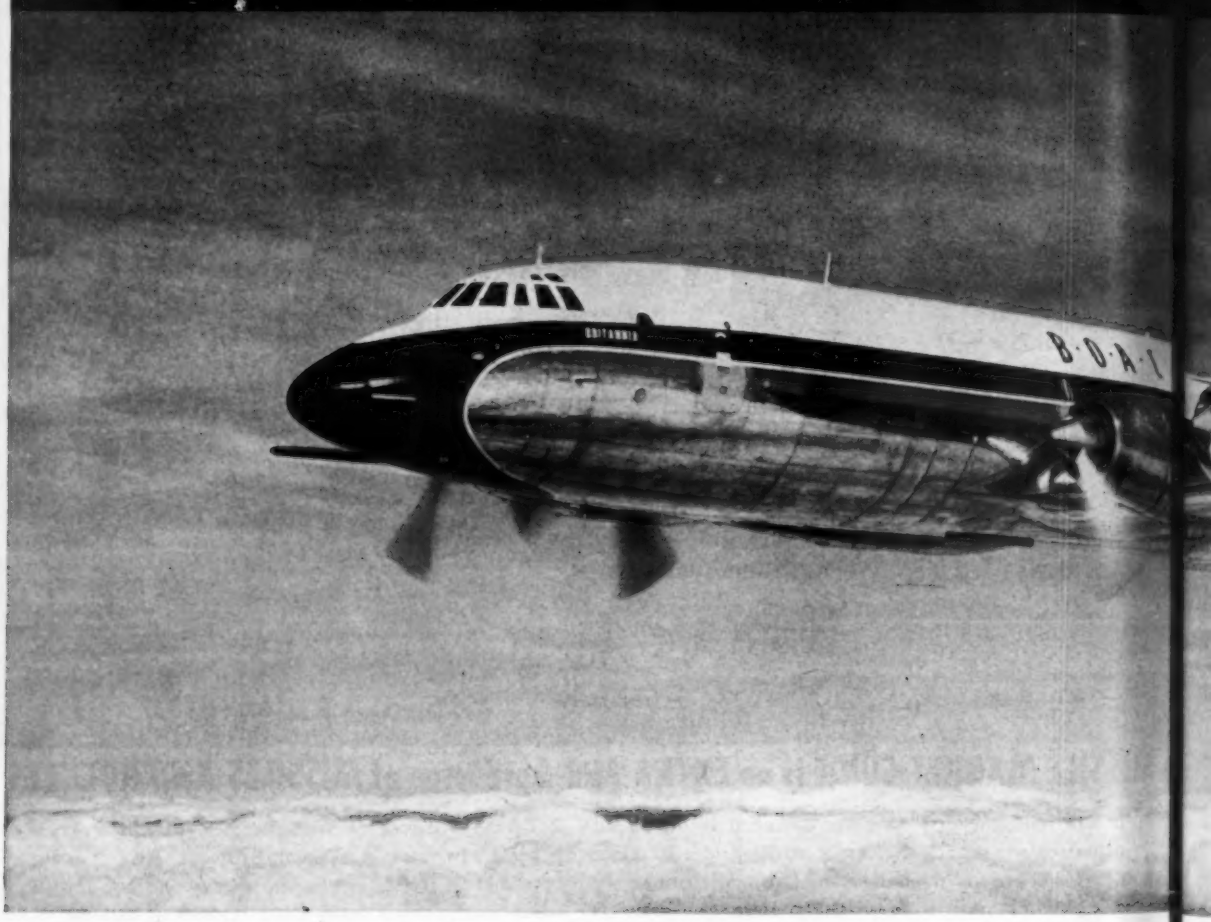
ON THE WORLD'S LONGEST, MOST EXACTING ROUTES

The Britannia is flying a



In February, BOAC entered the Bristol Britannia into passenger service on the London-Johannesburg route. Since then the number of services has steadily increased, and today BOAC's fleet of fifteen Britannia 102's are averaging 112 hours revenue flying daily on seven of the world's longest and most exacting air routes.

Routine efficiency—a million miles a month

ROUTE	ROUND-TRIP MILEAGE	WEEKLY FLIGHTS
LONDON to SYDNEY	23,602 miles	3
LONDON to HONG KONG	19,613 miles	2
LONDON to TOKYO	19,610 miles	3
LONDON to SINGAPORE	15,988 miles	1
LONDON to JOHANNESBURG	12,476 miles	3
LONDON to COLOMBO	10,404 miles	1
LONDON to ADEN	8,092 miles	1

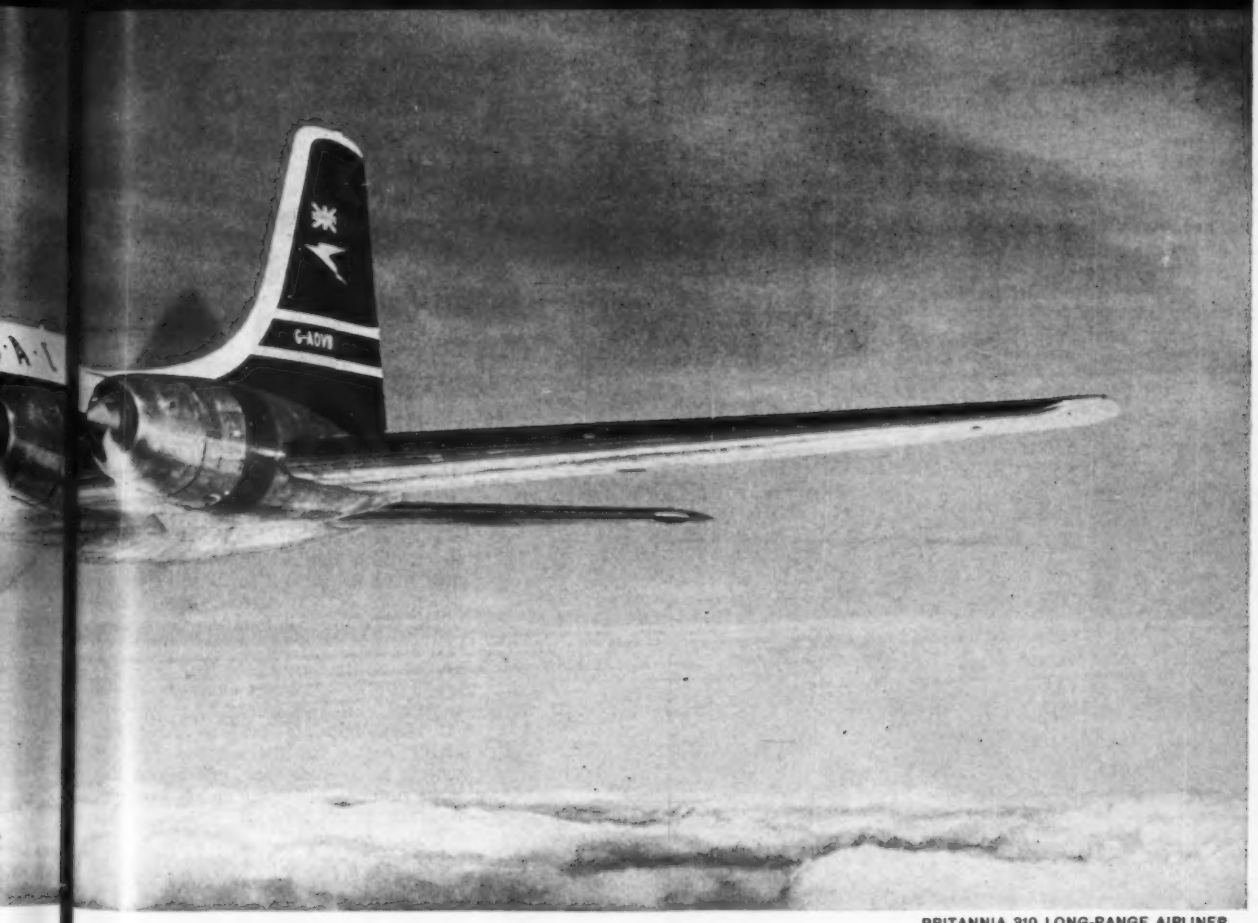
BOAC Britannias are now achieving a fleet average per aircraft of over 7½ hours revenue flying a day, seven days a week—an annual utilization rate of 2,750 hours.

For a new aeroplane to have achieved this during its first year of service is quite an exceptional record—already in the upper bracket of world airline utilization—and one which reflects high credit on the operator.

Worldwide demand for Britannia versatility—dependability

Britannia 300's and 310's are entering service with BOAC, El Al Israel Airlines and Aeronaves de Mexico. They have also been ordered by Canadian Pacific, Cubana de Aviacion, Hunting Clan Air Transport and Northeast Airlines. Britannia 250's are on order for the Royal Air Force, and the British Ministry of Supply.

ng a million miles a month



BRITANNIA 310 LONG-RANGE AIRLINER

The Bristol Proteus jet-prop engines of the Britannia are the most powerful in airline operation anywhere in the world. During the first 7½ months of scheduled service their permissible running time between overhauls was increased from 500 to 1,050 hours—the fastest that any engine has ever been approved for such a life after going into service.

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Small turbojets challenge high-thrust engines

Low cost, easier maintenance, wide range of applications for manned and unmanned aircraft spur J83/J85 development

by William Beller

PRAISES for the small turbojet engine were sung loudly and in harmony at American Sociey of Mechanical Engineers' annual meetings in New York by representatives from Fairchild Engine Division of Fairchild Engine & Airplane Corp., which is making such an engine, and from Northrop Aircraft, whose T-38 supersonic trainer will be using such powerplants.

They told the assembled engineers that a new and economical, and they underlined "economical," aircraft era is now possible, based on the use of lightweight turbojets.

Strongly reflecting these views were a number of Air Force spokesmen, who said their branch of the military was frankly worried about the increasing cost, complexity and weight that is attending development of higher and higher thrust engines. Although they readily admitted that there is no present substitute for large turbojets in heavy bombers and transports, they hastened to point out that small turbojets, say in the 1,000- to 3,000-lbs.-thrust category, could fill an important need in the powerplant spectrum.

Aircraft applications cited: jet trainers, troop trainers and cargo transports, lightweight bombers and interceptors, VTOL and STOL jets, drones and missiles, and for jet-assist of overloaded aircraft.

Civilian uses cited: feeder liner jets, executive jets and small personal planes.

Here is an example given by L. W. Davis, assistant to the vice president of Fairchild Engine & Airplane Corp. Two paper interceptors were studied to fulfill a given mission profile. In one design, a single large turbojet with about 10,000 lbs. thrust was used. In the second, the design centered around a number of small turbojets.

The results: each design showed the same performance capabilities. But the interceptor with the small turbojets showed more than a one-third saving in takeoff gross weight over that of the single-engine aircraft. There was a 26% weight-saving in the airframe alone. Other sub-savings: installed engine weight, 73.4%; fuel weight, 30%.

By applying these figures to an airframe priced at $35 per pound, Davis concluded that substantial airframe savings are at hand.

Two lightweight engines leading the field in their development are Fairchild's J83 and General Electric's J85. Specs are still held classified except that each engine is in the 2,000-lbs. thrust category. Educated guessing puts thrust at 2,425 lbs. and weight at 320 lbs. This sets the thrust-weight ratio of the lightweight engines at about 8:1, as compared with 3:1 which is the upper limit of most of today's large jet powerplants. For this reason, North American's utility jet (UTX) and Lockheed's JetStar are being designed around small jets.

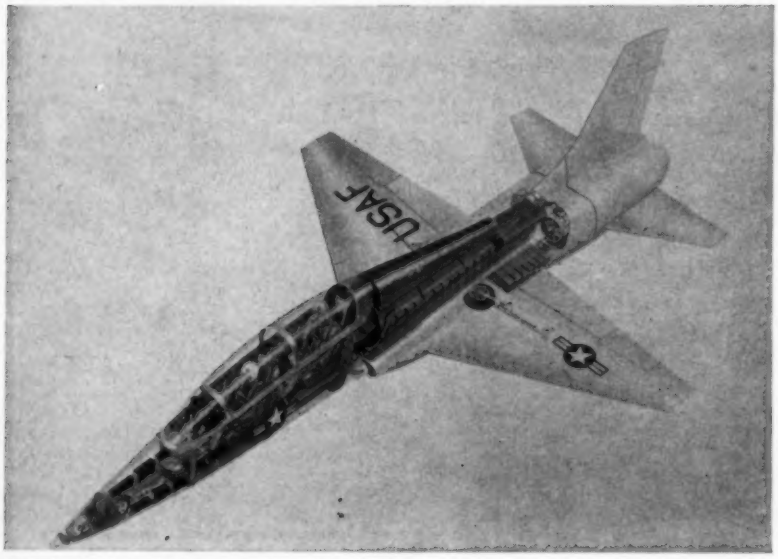
Reason for superior thrust-weight ratio of the small engine stems from two laws. The first says that for a given component state-of-art, the weight of a turbojet engine varies as the cube of a characteristic linear dimension. The second says that the thrust varies as the square of that linear dimension. These equations show that with decreasing turbojet engine weight there is an increasing thrust-weight ratio. Davis expects a 10 to 1 ratio for the small turbojet in the near future.

Specific uses of the small turbojet: (1) Propulsion units for small missiles and drones unable to support weight of large engines. (2) Multi-engine reliability for smaller sizes of inhabited aircraft. (3) Multi-engine reliability for VTOL aircraft. (4) Auxilary lift device that can be tilted or deflected to reduce gust loadings during flight through turbulent air. (5) Improved flight safety when used in combination with large engines for assisted takeoff, climb and emergency purposes. (6) For boundary layer control purposes since the engine is small and lightweight.

Reliability is said to be appreciably better for the smaller turbojet, which is a necessary condition if a large number of these engines are to be installed in an aircraft. Reasons given are that the small engine is a simpler one, works on lower pressure ratios and has fewer compressor stages. Therefore, there are fewer parts to fail. Further, the momentum of the smaller compressor and turbine blades would be far less than that for the blades in a large engine. Hence the airframe damage that could be done by a small blade escaping its casing would be comparatively small.

Ingestion of foreign objects is one of the major causes of jet engine failures. For a given size particle being taken in, it is agreed that the smaller engine would suffer most. It is advised that the first stage or stages of the smaller be ruggedized, which would bring about a small weight penalty. In the practical picture, the smaller engine, which has a smaller entrance duct and a lesser intake flow, would probably ingest proportionately smaller foreign objects.

According to Davis, the cost of ground support for the smaller jets is



NORTHROP'S T-38 supersonic trainer features twin General Electric J85 turbojets.

substantially less than for the larger ones. A conventional starter cart costs about $7,700. For the Century series of fighters, the price is pegged between $35,000 and $50,000. On the other hand, any plane with small jets can have its own built-in starter. Each fighter wing needs about 30 starters.

Modern aircraft can no longer get away with having a simple pump truck do its refueling. A high-pressure refueler is needed, one able to pump several hundred gallons per minute. Cost: $18,000, and about 14 are needed for each wing. Cheaper equipment can service the smaller jet engines. The same is said to be true all the way down the line, from fire trucks to runway sweepers, and from engine handling equipment to mobile test stands.

Three other advantages: (1) Heavy aircraft require frequent tire changes, and changes begin at $200. (2) Heavy aircraft require longer runways, and there are only 52 airports in the U.S. that have runways longer than 8,000 ft. (3) Technicians able to service highly complex engines are in short supply.

Some questions to be answered

From the foregoing data, it would appear that the small engine manufacturer has most of the cards stacked in his favor. But this is not necessarily true. Critics ask these questions. Suppose thrust requirements for a given mission call for an airframe with either two large engines or eight of the smaller ones, which is a distinct possibility:

How would the plumbing weight and complexity of the eight small engines compare with that needed for the two large ones? How would the frontal areas compare? How much of the wing span would be taken up by the pods of eight engines and how would these affect the lift and drag coefficients of the wing?

What about the structural complexity introduced into the airframe by additional engines? Might not a heavier wing be required thereby discounting the seeming weight advantage of the smaller engines? What about the additional powerplant instrumentation that would be needed in the cockpit and the additional time needed to monitor these instruments?

Critics then ask about fuel economy. Here the advantage clearly lies with the large engine.

A specific example of the use of these lightweight engines is found in the development of Northrop's T-38 supersonic trainer, whose early models will get J85s. This craft is designed to provide an economical, high-performance replacement for the T-33 in the basic trainer role.

Fundamental requirement set up by the Air Research Development Command was that the craft combine the functions of a basic trainer with the performance characteristics of currently operational combat aircraft, and have the lowest possible price tag. In essence, what the Air Force wants is maximum training at minimum cost.

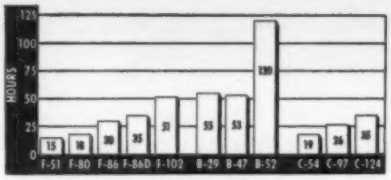


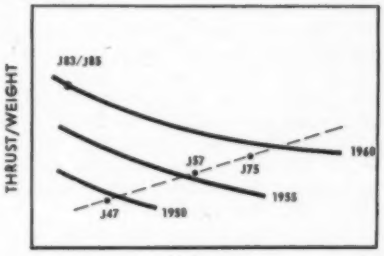
CHART SHOWS maintenance manhours per hour of flight as a function of airplane complexity.

To meet these requirements, Northrop's T-38 is powered by twin lightweight afterburning engines located in the aft fuselage. Fuel is carried in the fuselage center section. Wings carry only aerodynamic control surfaces and main landing gear. Seating is tandem. Nose section carries nose landing gear, communication and navigation equipment, and instrument landing system.

Two independent fuel supply systems are used, one for each engine. Engine-driven accessories are on the airframe and are driven by a jack shaft from the engine gear box. This arrangement permits engine removal with a minimum of disconnects. Engine starting system is within aircraft.

Northrop says that its 10,000-lb. class T-38 meets all its military performance requirements, from the standpoints of endurance, speed and altitude, and is equivalent to present-day combat aircraft weighing 20,000 lbs. The craft features short takeoff characteristics and outstanding single-engine performance. In fact, this single-engine performance is said by Northrop to exceed the maximum performance of any of our World War II fighters.

The Air Force has no development program for utility aircraft using either the J83 or the J85. However, the Air Force is intensively studying areas of application for the new engines. One of the most active involves missiles.



THRUST-WEIGHT RATIOS of small turobjet engines such as the J83 and J85 show values significantly greater than those for large-thrust engines.

Republic tests Multi-Jet noise suppressor

Successful completion of tests evaluating a highly portable and inexpensive jet-engine noise suppressor, used for checking out engines prior to their installation, was announced jointly by Republic Aviation Corp. and International Aerocoustics Corp., New York.

Called "Multi-Jet," the unit is being used for engine ground-testing Republic's F-105 Thunderchief. Silencer is manufactured by International Aerocoustics under license from United Aircraft Corp.

Outstanding features: *Flexibility*—can be used on portable jet-engine test stands. *Light Weight*—unit for J47 weighs 180 lbs.; for J75 weight is 1,000 lbs., including trailer. *Low cost*—for J47 unit, about $5,000; for J75 unit, between $8,000 and $10,000.

Aerocoustics' president Martin Hirschorn pointed out that there is no coupling between the Multi-Jet and the engine under test or warm-up. He said that the noise control provided by these new units should solve most of a community's noise problems created by commercial jet aircraft.

Engineering theory is this: Jet air stream is first broken up by 170,000 holes of about 0.08 inch diameter, which line the silencer's exhaust stack. Combustion products are then bled off by a series of concentric shrouds.

International Aerocoustics Corp. recently took over all domestic and foreign operations of the now extinct Aviation Div. of Industrial Acoustics. Thus, International Aerocoustics is the sole source of Acou-Stack, Dura-Stack and Multi-Jet jet engine and turboprop noise suppressors. Industrial Acoustics Co., Inc., continues to handle all industrial, medical and air-conditioning noise-control products. The same research and development laboratory continues to serve both corporations.

MULTI-JET SILENCER mounted on jet-engine test stand. Adapter provides quick engine replacement or fast removal of silencer.

Bomarc guidance spawns new testing techniques

by Henry P. Steier

WHEN BOEING'S BOMARC interceptor missile becomes operational its reliability will be backed up by some of the most comprehensive flight tests ever made.

Development and production of the complex ground support and operational test equipment is said to be the largest such project in the U.S. The company selected by Boeing to build prototype equipment was Farnsworth Electronics Co., division of International Telephone and Telegraph Corp., Ft. Wayne, Ind.

Some idea of the size of the project is indicated in an announcement by Farnsworth president, L. G. Haggerty, that the company had received additional orders from Boeing amounting to more than $12 million.

The company is one of the pioneers in missile guidance, dating back to 1945. Work has been done on the Bomarc, Talos, Terrier, Sparrow, Meteor, Titan, Atlas, Rascal and Lacrosse.

According to J. Alvin Henderson, Farnsworth's director of research and development, this work formed an excellent background for the Bomarc tactical test equipment job.

Full details on the test equipment are still under security, but it is known that it has eight basic parts: functional checkout; electrical launching; mobile inspection; major assembly sets; mechanical test; battery servicing; service checkout, and missile exerciser.

DR. PHILO T. FARNSWORTH, founder of Farnsworth Electronics Co., examines one of many special-purpose tubes developed by the company. He predicts controlled nuclear fusion will depend heavily on tube know-how.

Tests in few minutes

Largest of these is the functional checkout (FCO), which is housed in 15 cabinets that fill a very large room. Operating in step sequence FCO performs several thousand tests in a few minutes.

One of the unique features of the Bomarc equipment is that even the test sets have their own test sets for check out. To assure the utmost in reliability, circuits that do the testing are automatically put through their paces before a test is run.

Lights indicate whether they are performing satisfactorily. If not, a back-up circuit is available. During the rapid testing, automatic indications show whether a functional assembly or the test set is at fault in case of a reject.

The missile exerciser is a device for putting the missile through its pace on the ground simulating an actual tactical situation. Everything but the powerplant is operated and even that undergoes a simulated operational check.

At an operational site, some of the test gear will be located in fixed housing and others will be in mobile vans. Some of the fixed equipment is for maintenance facilities that will form part of a Bomarc operational base. This will be used to check out plug-in units supplied in packaged form. Mobile parts of the test system will be for tests on the whole missile.

Farnsworth has organized a separate department to handle the Bomarc test equipment project. Active on it are 170 engineers. Developmental models of the first ten units are now being built.

A new 160,000-sq.-ft. Farnsworth facility is being built at Ft. Wayne, but no announcement has been made as to its exact use. In the event the Bomarc test equipment project becomes a large quantity production job, the new factory would be suitable to handle the work.

Farnsworth is a pioneer in R&D on components and equipment for aircraft and missiles. Dr. Philo T. Farnsworth is an electronic notable who is credited with conceiving of electronic television while still a teen-ager. He got the idea for an image dissector tube at the age of 15.

The Farnsworth Co. bought the Capehart Co. at Fort Wayne, Ind. in 1939 and built both military and consumer products. In 1949, IT&T purchased Farnsworth Radio and Television Corp. and operated it as the Capehart-Farnsworth Co. until last year, when the company's radio-television business and "Capehart" name were sold to a New York firm.

From the beginning, the company was noted for its special-purpose electron tube know-how, especially in the fields of television, infrared and phototube devices.

Henderson said 40% of the company's dollar income is from R&D, and that Farnsworth still does more tube research than any other type.

Farnsworth now employs about 1,400 people for its R&D. Of these 500 are engineers and scientists. Strong position of the company in R&D is indicated in growth of dollar business done over the past five years.

Five years ago it did $3 million in R&D. In 1956 it did $14 million and in 1957 this is expected to be about $21 million. These figures are exclusive of production work.

Since elimination of the consumer product business, the company's military and industrial work has been expanded considerably. Space formerly devoted to consumer product work has just been refurbished for R&D and production in the selected fields.

Interested in atomic energy

Dr. Farnsworth, an active top technical advisor in the company, told AMERICAN AVIATION he is very much concerned with the impact a "practical source" of atomic energy for missile propulsion will have on his business.

This source, he said, rules out the fission process. In that process, he noted, you take along enough fuel for 20 years in order to run for a half-hour. In the fusion process you take along only what you need and use it up.

An anti-missile defensive which uses one missile to destroy another means the chasing missile must have a propulsion system which is continuously active, unlike the ballistic type it will be asked to destroy.

Dr. Farnsworth contends present nuclear power systems, with their shielding problems and attendant weight penalty, or chemical fuel systems, with limited duration, won't do the job.

A close follower of the work of U.S. fusion scientist Dr. Edward Teller, as well as British and Russian activity in the field, Dr. Farnsworth believes we can expect a breakthrough on the fusion art "fairly soon."

This would mean, he said, that the Farnsworth company must take a "new look" at the missile program, and plan for reorientation. "Fusion devices of the future," said Farnsworth, "will be tube devices, so you can think of them as one glorified form of a vacuum tube."

"Magnetic bottles" or glass tubes containing either deuterium or deuterium and tritium are being tried by the Atomic Energy Commission (Project Sherwood) to demonstrate that fusion reaction can be controlled.

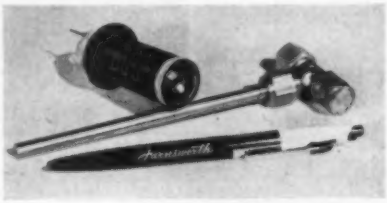
Gases in a doughnut-shaped tube are subjected to a strong magnetic field and a heavy current is passed through the gases. This creates high temperatures which ionize the gases and form a "plasma." When nuclei in the plasma collide, they fuse. This releases huge amounts of energy.

The Russians have reported producing a "plasma" of gases which reached a temperature of one million degrees centigrade in this way. This was done by passing electric current through deuterium and other gases sealed in glass tubes from a few centimeters to two meters in length.

Passing heavy current through the gas creates what is known as the "simple pinch" which squeezes the plasma into a thin hot stream.

Ultimate goal is the 100-million-to-one-billion degrees needed for sustained fusion. Problem is to prevent the heat from destroying the container. In the U.S., magnetic fields are being used to "pinch" the plasma into a thin stream and isolate energy from the reactor walls.

The Russians have reported combinations of the "simple" pinch and magnetic coils to produce a more stable reaction. The magnetic field tends to isolate the heat from the container's walls. Reactors thus far have been unstable. However, current work is trying to apply combined simple pinch and magnetic pinch forces in attempts to stabilize the fusion process.



FARNSWORTH "P" TYPE gold-doped germanium infrared cell gives highest sensitivity when cooled to about 4 degrees above absolute zero. Device on which cells rests is cryostat used with the cell.

Dr. Farnsworth said that, when the breakthrough comes, it will mean power production amounting to "many thousands of horsepower for masses that get down to 10 to 15 pounds."

At the moment, he said, it's the auxiliary equipment that gives trouble. This is the massive part of the equipment. But when the breakthrough is achieved engineers will have the opportunity to achieve unheard of amounts of power in small packages.

If current work means anything, the companies with heavy electron tube experience should have a big stake in this new field.

The Farnsworth company has made contributions to the fission field with tube development.

One of these is a photomultiplier tube used in instrumentation associated with nuclear explosions. Electrical current-handling capacity of the tube is measured in terms of amperes.

Infrared developments

Farnsworth is one of the few companies supplying complete infrared systems and lead telluride cells to the military.

On infrared application to the civil air collision problem, Henderson pointed out that, although Farnsworth submitted a paper to the Air Transport Assn. on the possibility of infrared use as a proximity indicator, "we are not blind to the fact that it works only in good weather."

Farnsworth is working on detectors for all portions of the infrared spectrum. Lead sulphide, lead telluride, gold-doped germanium types are being built and a new bolometer concept is being tried. The bolometer, a thermal-type detector, has promise of advantages because of its response over a wide portion of the infrared spectrum.

Along with this effort the company is working on cooling devices for the detectors. Gold-doped germanium cells, for example, must be cooled to about 70 degrees above absolute zero for peak sensitivity.

Getting and holding such temperatures is a knotty problem. Although flasks containing liquid helium can do the cooling, this is not the practical answer to many airborne infrared detector systems. The method is clumsy and the helium dissipates at a rapid rate.

Future need is a small, military-type package to handle the ultrahigh pressures for getting very low temperature refrigeration. For some of the present-day airborne operational detectors such as lead, telluride, where −196°C is needed, practical cooling means have been found and allow satisfactory flight times.

Looking to the future for more advanced infrared detectors, the company is attacking the cooling problem. It has what it believes is a revolutionary refrigeration development under way to enable long flight times for infrared detectors needing extra-low temperatures.

Such a device woud give a big boost to possibilities for improved performance and better application of infrared devices to the civil air collision problem.

Among the many infrared devices being built by the company is a test set for checking any type of infrared detector. Farnsworth is believed to be the only company producing such a tester.

Civil aviation R&D

Farnsworth's Iatron storage tube is among the devices being tested by CAA in its program to develop large radar displays. Although less satisfactory at this time than the "Frenchicon" (AMERICAN AVIATION, Oct. 21) for use in scan conversion work, the tube is being improved.

The company has a contract to deliver scan conversion equipment to the CAA next summer. Unlike the present radar plan-position to TV-scan converters, the new unit is for remoting converted radar information.

Scanning will be done at low frequencies for transmitting over telephone lines. The slowed-down video will be transmitted on a carrier frequency for good reproduction. The signal will be piped using a single-sideband method for best utilization of communication channels. After delivery, the signal will be speeded up again for TV-type reproduction.

When the information is taken from the radar it will be fed to a Frenchicon for conversion to the slow rectangular TV-type scan. At the receiving end it will go into a second Frenchicon for conversion to fast rectangular scan.

PEOPLE

William M. Allen, president of Boeing Airplane Co., recently inspected the Rolls-Royce Conway engine installation in the Avro Vulcan flying test bed. He is shown, center, with **J. D. Pearson,** chief executive and deputy chairman of Rolls-Royce Ltd., left, and **K. Luplow,** European sales representative for Boeing.

Col. William G. Draper (center), President Eisenhower's pilot, is shown after inspecting the new Trecker Super Gull, during demonstration at Washington National Airport. From left: **Kenneth H. Goodsell** of H. A. H. Cook Associated, eastern distributors of the plane; Colonel Draper, and **Thomas Lalley,** also of Cook.

J. G. Notman (left), Montreal, president of Canadair Ltd. and retiring president of Air Industries and Transport Assn. of Canada, welcomes organization's new president, **Richard W. Ryan,** who is executive vp of Canadian Pacific Airlines, Vancouver.

Gov. Joe Foss of South Dakota was principal speaker at the annual banquet of National Aviation Trades Assn. at Dallas. Shown at speakers table, from left: **James T. Pyle,** CAA administrator; **Galen Bertram,** Greensburg, Kans., 1957 NATA president; **Brig. Gen. Max J. Volcansek, Jr.** (USMC ret.), who introduced Foss, and the governor. Foss and Volcansek, who now is associated with Texas Instrument Co., flew together in the Pacific.

Participating in morning session of NATA convention were those shown above. From left: **Edward J. Engoron,** director of maintenance engineering, Office of Asst. Secretary of Defense; **Maj. Gen. A. G. Hewitt,** director, maintenance engineer, DCS-Materiel, USAF; **John T. Griffin,** Lexington, Mass., NATA vp-maintenance; **A. Biederman,** chairman, National Aviation Maintenance Council, NATA, and **Brig. Gen. William Bunker,** U.S. Army, St. Louis.

HARGER

STANWICK

KIDWELL

BOYD

ANDERSON

DEGEN

Manufacturing

Name	New Position	Former Position
William W. Harger	Chief project mgr., Link Aviation, Inc.	Tech. dir., Berkeley Div. Beckman Instruments
Tad Stanwick	Corporate vp, Cleveland Pneumatic Tool Co.	VP, American Machine and Foundry Co.
E. G. "Slim" Kidwell	Gen. mgr., Northern Aircraft, Inc.	Operator, Kidwell Aviation Co.
Maj. Gen. Albert C. Boyd	Consultant and advisor to Group Gen. Mgr. on general defense products, Westinghouse	Deputy ARDC commander for weapon systems
Col. James W. Anderson, Jr., (USAF, ret.)	Spec. asst. to chm. bd., Magnavox Co.	With ARDC
Joseph F. Degen	VP-mfg., Weston Electrical Instrument Corp.	Mfg. supt.
J. J. Alkazin	Mgr., Customer Service Dept., Convair	Mgr. service, Engrg. Dept.
Leland R. Taylor	VP, North American Aviation, Inc.	Asst. to pres., general offices
Joseph G. Beerer	VP, North American Aviation, Inc.	Gen. mgr., Missile Development Div.
John R. Moore	VP, North American Aviation, Inc.	Gen. mgr., Autonetics Div.
Samuel K. Hoffman	VP, North American Aviation, Inc.	Gen. mgr., Rocketdyne Div.
Miles K. Wolfson	Mgr. engrg., GE Production Engine Dept.	Mgr. engrg., J47-J73 project
Carl E. Anderson	Mgr. mfg., GE Production Engine Dept.	Mgr. spare parts sec., Aircraft Gas Turbine Div.
Nicholas F. Frischhertz	Mgr. spare parts and engine rebuild, GE Production Engine Dept.	
Gordon H. Lafferty	Chief test engr., Ballistic Test Station, American Machine & Foundry Co.	Mgr. engrg.
J. L. Plant	Exec. vp and gen. mgr., Avro Aircraft Ltd.	Asso. research engr.
W. R. Entrikin	Sales mgr., Electronics Div., Elgin National Watch Co.	Exec. vp, Collins Radio Co. of Canada Ltd.
Fred S. Miller	Mgr., Solid Propellant Production, Aerojet-General's Solid Rocket Plant	Field service rep., The Martin Co., Denver
J. B. Cowen	Mgr. mfg., Solid Rocket Plant, Aerojet-General	Rocket engr.
Carl Neisser	Mfg. mgr., Systems Div. of Beckman Instruments, Inc.	Exec. asst. to vp-mfg.
Jerome I. Cohn	Dir. sales engrg., Inso Products, Ltd.	Regional sales mgr., Helipot Div.
Zeke R. Smith	VP, Potter & Brumfield, Inc.	Mgr. mfg. Electronic Wiring Corp.
George E. Ellis	Industrial products mgr., Stratos Div., Fairchild	In engrg. dept.
Robert D. Davis	In chg., mktg. dept., Research and Advanced Development Div., Avco	Gen. sales mgr., Lipe-Rollway, Inc.
Stephen P. Moorhead	VP, Embry-Riddle Aeronautical Institute	Contract administrator
L. D. Carlton	VP, Embry-Riddle Aeronautical Institute	Asst. to the pres.
Dr. Roger S. Estey	Head, Advanced Engrg. Sec., Western Sub-systems Div., Servomechanisms, Inc.	Dean of admissions
Lee A. Strickland	Comptroller, L. B. Smith Aircraft Corp.	Supv. infrared group, Engrg. Dept.
Gene Hopkins	Mgr. Dayton Office, The Martin Co.	With Heck and Hasencamp
R. V. Lynch	Sales mgr.-aircraft, Chance Vought	Advanced design staff engr.
G. M. Monroe	Sales mgr.-missiles, Chance Vought	Sales mgr.
Arthur R. Collins	VP, Stewart-Warner Corp.	Chief, military sales
Donald H. Montgomery	Sr. supv. development engr., Transducer Div., Consolidated Electrodynamics	Gen. mgr., South Wind Div.
Monte L. Marks	Chief development engr., Analytical and Control Instruments Div., Consolidated Electrodynamics	Supv. development engr.
Edward H. Fisher	Pres., Tube Reducing Corp.	Project engr.
John J. Bricker	VP, IBM	VP and mgr., Special Products Div., Oliver Corp.
Fred A. Maxam	Project engr., Model 720, Boeing	Dir. of personnel
Harlan A. Robinson	Exec. vp, Rantec Corp.	Engr.
John R. Cary	Sr. project engr.-thermodynamics, Waste King Corp.'s Technical Products Div.	Dir. planning, Hughes Tool Co.
Harvey O. Oberg	Mgr., Hydraulics Div., Wyle Laboratories	Asst. project engr.
David F. Shaw	VP, Kaiser Engineers	Lead engr., North American Aviation
Dwayne K. Jose	Eastern div. sales mgr., Cessna	Asst. gen. mgr. for mfg., AEC
Joseph P. Baker	National sales mgr., Magnetic Research Corp.	Regional sales mgr.
J. R. Bradford	Pub. rel. officer, Bristol Aeroplane Co.	Mgr., magnetic amplifier sales, Westinghouse
James F. Toole	Treas., Sperry Rand Corp.	Engr., Bristol Aero-Engines, Ltd.
Frederick D. Herbert, Jr.	Exec. vp, Kearfott Co., Inc.	VP and treas., Sperry Gyroscope Co.
Herman R. Shuart	Exec. vp, Kearfott Co., Inc.	Financial vp
Robert N. Brown	VP-dir. engrg., Kearfott Co., Inc.	VP-engrg.
Robert S. Salchek	Adv. mgr., Hoffman Semiconductor Div., Hoffman Electronics Corp.	Dir. engrg. and chief engr.
A. F. Burke	Deputy Chairman, de Havilland Holdings Ltd.	With Motorola Chm., de Havilland Engine Co. Ltd. and managing dir., de Havilland Aircraft Co.
Ferdinand P. Diemer	Dir. engrg., Cal-Tronics Corp.	Technical consultant
Walter T. Camp	Gen. mgr., Arrowhead Products Div., Federal-Mogul-Bower Bearings, Inc.	With Bearings Co. of America Div.
Lloyd E. Thompson	Supv. engrg. analysis group, Weber Aircraft Corp.	Project engr., ejection seat group
Kenneth J. Bhore	Avon sales mgr. in North America, Rolls-Royce of Canada	Dir. gen. civil aviation for Pakistan
H. Stanley Taylor	Sales mgr. Conway engine, Rolls-Royce of Canada	Liaison with Westinghouse at Derby
P. J. White	Sales mgr. Tyne engine, Rolls-Royce of Canada	Sr. rep. in Canada for N. Napier and Son
Herbert J. Pyle	VP, A. Biederman, Inc.	Asst. sales mgr., Bendix Montrose Div.
Vice Adm. Harry Sanders	Staff engr., missiles, Chance Vought	U.S. Navy (ret.)
John F. Kinkel	VP and dir., Northam Electronics, Inc.	Asso. tech. dir.
Harlan A. Robinson	Exec. vp, Rantec Corp.	Dir. planning, Hughes Tool Aircraft Div.
Ruben G. Kugel	Pres., Nosco Plastics, Inc.	Exec. vp and treas.

Airline

Jack E. Gallagher	VP-operations, New York Airways	Captain
Harry G. MacKenzie	Staff mgr., interline passenger sales, American Airlines	Dist. mgr., sales planning, San Francisco
Eugene J. Murray	Dir. purchasing and stores, American Airlines, Tulsa	With Westinghouse
Richard R. Pettit	Exec. vp, Transocean Corp. of Calif.	Chief legal counsel, Transocean Air Lines
Don Churchward	Dir. passenger sales, Alaska Airlines	Traffic and sales mgr., Seattle dist.
Ed. Higgins	Dir. cargo and specialty sales, Alaska Airlines	Traffic and sales mgr., Anchorage dist.
G. O. Eckley	Mgr. insurance, United Air Lines	Auditor
Orlando Torres	Asst. to pres., Riddle Airlines	Puerto Rican regional vp
Abram Waldo French	Curator, Pan American World Airways	Schedule specialist, New York office

INTERNATIONAL

How much does an international airline make per hour?

by Anthony Vandyk

IT'S A STRANGE THING (or is it?) that IATA, the international airlines' association, publishes no statistics about the finances of its member carriers. We have to go to the governmental group, the International Civil Aviation Organization, to take the financial pulse of the international air transport industry.

Since this column last talked of ICAO's good work in throwing light on international airline finances (AMERICAN AVIATION, Nov. 18), that organization has come up with some more highly significant data: ICAO's statisticians have computed the hourly profit or loss in dollars per revenue-hour flown for most of the world's international carriers. Although the figures are fairly old—they're for 1955—they are extraordinarily interesting.

On an hourly basis, the international operation which lost the most in 1955 was that of Resort Airlines; no less than $328 went down the drain for each revenue hour flown. Next biggest losers were Aerolineas Argentinas and Panair do Brasil which each lost $121 per hour.

The top moneymaker listed by ICAO was South African Airways with a profit of $100 per hour, followed by American ($75) and Eastern ($62). In the latter two cases it is important to remember that the figures related to international operations only.

The highest operating revenue per revenue hour flown in 1955 was that of Brazil's REAL ($798) followed by BOAC ($782) and Panagra ($778). At the low end of the totem pole on operating revenues were Resort Airlines ($104) per revenue hour flown, Air Ceylon ($108) and Mackey ($129).

In terms of operating expenses per revenue hour flown Panair do Brasil topped the list at $874 followed by REAL ($770) and Panagra ($742). Lowest operating expenses recorded by ICAO are shown for Air Ceylon ($107), Malayan Airways ($136) and Riddle ($169).

Panair do Brasil and BOAC had substantially higher maintenance and overhaul costs (as part of their total operating expenses) than the other carriers reported in 1955—$185 and $180 per revenue-hour flown.

This financial data for some 50 airlines would be well worth the modest price of $1 (Canadian) asked for the publication in which it appears—ICAO Digest of Statistics No. 63 "Fleet-Personnel-1955." In fact the financial statistics represents a minute part of the book, which is mainly devoted to enumerating details of the fleets (including individual permitted weights, numbers of seats and utilization) and personnel of the airlines. Information on personnel includes average salaries for both ground and flying personnel.

Where can you get this mine of information? From ICAO, International Aviation Building, 1080 University Street, Montreal, Canada, or through any ICAO regional office (Paris, Lima and Cairo). Let's hope that one day this type of useful data will be available from IATA.

Italian jet trainer starts flight tests

MACCHI MB.326 jet trainer started its flight test program Dec. 10. Italian aircraft is powered by an Armstrong Siddeley Viper. In this photo the MB.326 is seen with various other Macchi postwar models.

BRIEFS

REAL, South America's largest airline, plans to inaugurate Super-H Constellation service on its Rio de Janeiro-Miami-Chicago route late in January. The Brazilian carrier expects to get its first Super-H at the end of December, the second in January, the third in February and the fourth probably in March. The aircraft will be furnished with a luxury 81-seat interior. . . .

Panair do Brasil says it ordered the DC-8 rather than the Boeing 707 because the Douglas aircraft offers a better payload on the Rio de Janeiro-Lisbon sector. PAB has four DC-8s on order. At the moment its fleet comprises four DC-7Cs, 10 L-49 Constellations, 14-DC-3s and four PBY Catalinas. PAB is studying the possibility of ordering three more DC-7Cs. PAB is interested in keeping its Constellations in service for many more years and consequently is studying the possibility of re-engining the fleet with Napier Eland turboprops. . . .

VASP is considering purchasing six Fokker F-27s. The Brazilian airline will take delivery of a fleet of five Viscount 800s next year and will set up to overhaul the Dart engines at a later date. VASP believes it would therefore be logical to buy the Dart-powered F-27 to replace its fleet of 15 DC-3s. The airline intends to retain its fleet of Swedish-built Saab Scandias. It currently operates 14 of these twin-engine transports and is about to receive three more. . . .

Chile's **Linea Aerea Nacional** plans to extend its operations to Miami next year. It will operate its Santiago-Miami route via Lima, Guayaquil and Panama with DC-6Bs. Initial frequency will be twice weekly. The airline is planning a route to Europe and also intends to extend its route to Montevideo on to Rio de Janeiro. . . .

Varig has selected the Conway to power its three Boeing 707s because the Rolls-Royce engine will enable the jet transport to carry several thousand more pounds of payload nonstop from Rio de Janeiro to New York than the Pratt & Whitney JT4 (J75). The Brazilian airline may soon increase its Caravelle order from two to five aircraft, with an option on three more. The Convair 240 fleet, which is being increased to ten aircraft through the purchase of PAA's remaining five planes, will be given a face lift with the installation of completely new interiors. Varig is also buying PAA's entire stock of Convair 240 spares.

Qantas expands overhaul facilities for jets

Three locals may get big break in new routes

CAB Examiner's recommendations would strengthen Frontier, North Central, Ozark at cost of $2.5 million in subsidies

by William V. Henzey

THREE LOCAL SERVICE AIRLINES were recommended by CAB Examiner Curtis C. Henderson this month to fill the "largest void in local service air transportation" in the United States. The three are Frontier Airlines, North Central Airlines and Ozark Air Lines. The "void"—referring to the absence of air routes—is an area embracing the States of North and South Dakota, Nebraska, Iowa, Illinois, Wisconsin and Minnesota.

The case is known as the Seven States Area Case. It is the first of a series designed to improve or add service to designated areas in the U.S. and to strengthen route systems of the nation's local carriers. Cost to the taxpayer of the new services recommended by Henderson will be about $2,506,503 annually in so-called "break-even subsidy pay."

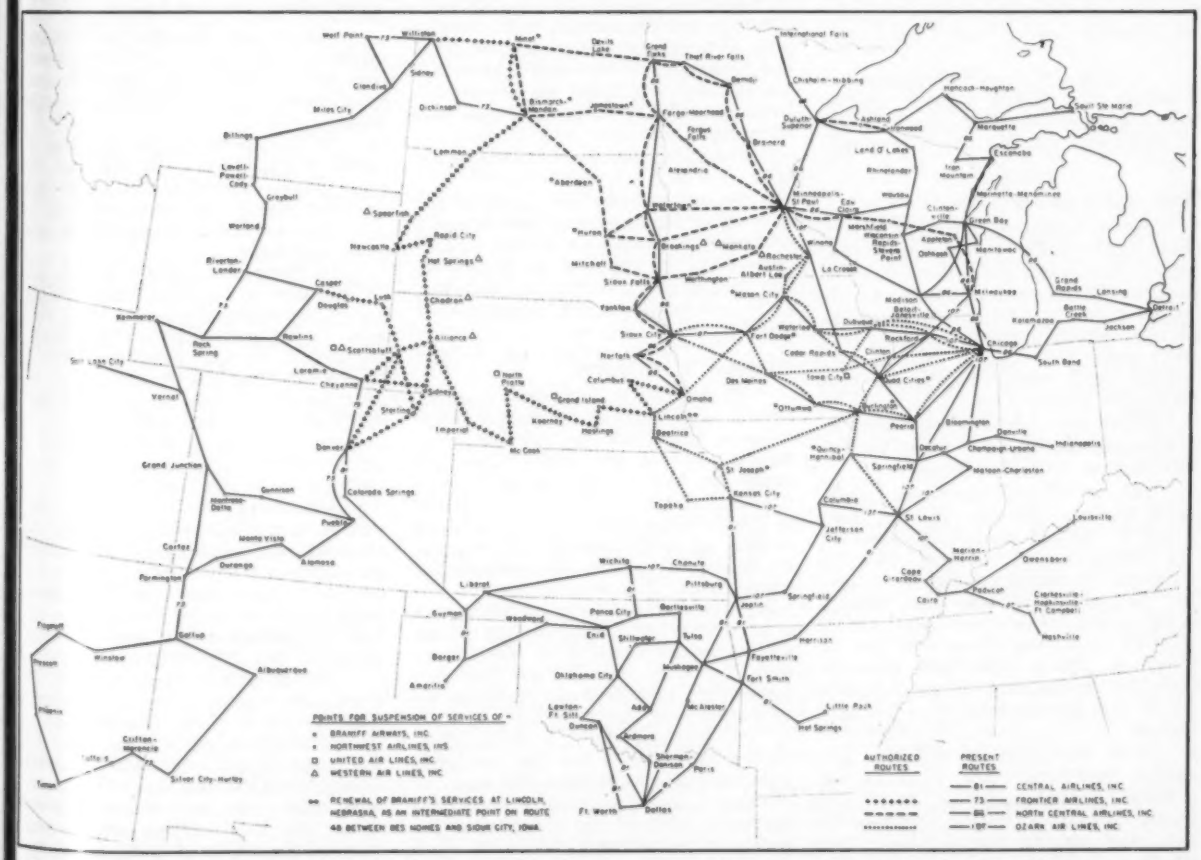
Coupled with the route awards to the three local lines are various suspensions of service by trunklines serving the area. The case, which still must be decided by the five-man CAB, probably in early Spring, will set the pattern for other "area" cases in progress but not as far advanced.

If Henderson's proposal is adopted by the Board, it would indicate the Government feels the added subsidy is a good investment. Although the added $2.5 million involved in the Seven States Case is substantial, he said, "the expenditure is at a per plane-mile rate that compares favorably with the break-even need cost of comparable services in the local industry."

"These routes," he continued, "will give improved service to the cities where suspension of trunkline service has been authorized and also improved service to several other cities in the area presently receiving local service. Air service is also authorized to many cities for the first time in the Dakotas and Nebraska where existing transportation facilities are inadequate . . . It is apparent that the traveling public in this area is entitled to a sound pattern of local service to meet the needs of the entire area."

Detailed descriptions of the new routes proposed for the three lines are apparent on the map below. Generally, they add up this way:

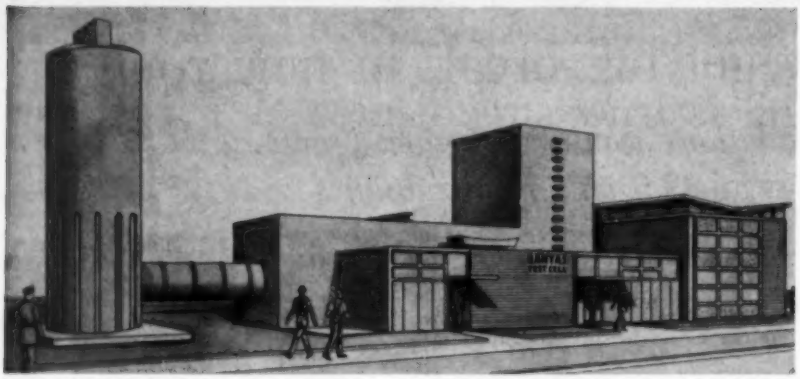
Frontier, whose present system is north-south between Arizona and New Mexico, on the one hand, and Montana and North Dakota, on the other, would be extended to the east as far as Omaha and to the north as far as Minot, N. D., with 19 new cities added. In addition, new segments would be authorized out


POINTS FOR SUSPENSION OF SERVICES OF:
BRANIFF AIRWAYS, INC.
NORTHWEST AIRLINES, INS
UNITED AIR LINES, INC.
WESTERN AIR LINES, INC.
RENEWAL OF BRANIFF'S SERVICES AT LINCOLN, NEBRASKA, AS AN INTERMEDIATE POINT ON ROUTE 48 BETWEEN DES MOINES AND SIOUX CITY, IOWA.
AUTHORIZED ROUTES
PRESENT ROUTES
81 — CENTRAL AIRLINES, INC.
73 — FRONTIER AIRLINES, INC.
86 — NORTH CENTRAL AIRLINES, INC.
107 — OZARK AIR LINES, INC.

MAP shows how routes of three local airlines would converge on seven midwestern states under CAB Examiner's proposal.

At last: a no-show system that works

Qantas expands overhaul facilities for jets



ARTIST'S CONCEPT of jet design test cell being built by Qantas Empire Airways, Ltd. at Mascot airport, Sydney, Australia. Cell contains Acou-Stack and Dura-Stack silencing systems designed by International Aerocoustics Co.

DC-8 to be equipped with flush toilets

A modern improvement in the DC-8—flush toilets. Douglas has devised a recirculating water system tied in with a disposal system which does away with the chemical-type used in present aircraft. At first, Douglas contemplated an incinerator, but changed over to a central rendering system to dispose of solids.

The system will have to be cleaned out on the ground, but a ramp crewman, Douglas says, "can do it wearing a Tuxedo." The recirculating water system is started with 2½ gallons, after which all waste water—from wash basins, galley, etc.—also is recovered, purified, deodorized and otherwise made suitable for the electrically-actuated (pushbutton) flush toilets.

of cities currently served by FAL, such as Denver, Cheyenne and Casper.

Conditions attached to the proposed new routes generally require FAL to serve all intermediates with two daily roundtrips but permit overflying such points on flights above that number.

North Central, whose basic system is bounded by the Great Lakes area in the east and the eastern borders of North Dakota, Iowa and Nebraska in the west, would get five new segments extending west from Twin Cities plus new north-south services through the western border states mentioned above.

As with new services proposed for Frontier, the North Central awards would permit overlying intermediates on flights in excess of two daily roundtrips.

New segments for Ozark

Ozark, whose basic system is bordered in the south by Nashville, Tenn. and in the north by Minneapolis-St. Paul, would get new segments extending west out of Chicago to points in Kansas, Nebraska and Iowa plus a new north-south route from Minneapolis through such points as Omaha and Topeka to Kansas City.

Ozark also would be permitted to overfly intermediates on flights in excess of two daily roundtrips.

Central Airlines, the other major local service applicant in the case, would be denied route extensions in this particular case. "Central," Henderson said, "proposes to extend its system into and across an area already being served by another local carrier (Ozark) . . . Central's service area is, therefore, almost completely removed from the general area involved, touching at only Kansas City, St. Louis and Denver."

"On the other hand," the Examiner continued, "the local service applicants, Frontier, North Central and Ozark, are all operating within the area and serving geographical areas which are closely tied into the economic, educational and political life of the Seven States Area."

Meanwhile, to make way for various new local airline services recommended, Henderson proposed trunkline service suspensions as follows:

Braniff Airways at Minot and Bismarck-Mandan, N.D.; Aberdeen, Huron and Watertown, S.D., Burlington, Fort Dodge, Mason City and Ottumwa, Iowa, Moline and Quincy, Ill., St. Joseph, Mo. and route No. 48 between Des Moines and Sioux City, Iowa.

Western Air Lines at Alliance, Chadron and Scottsbluff, Neb.; Brookings, Hot Springs and Spearfish, S.D., and Mankato and Rochester, Minn.

United Air Lines at Iowa City, Iowa, Grand Island, North Platte and Scottsbluff, Neb.

Northwest Airlines at Jamestown, N.D.

On other trunkline issues in the case, Henderson proposed that Braniff's temporary authority for service to Lincoln, Neb. be changed to permanent and that Braniff's service at Rochester, Minn. not be suspended, abandoned or transferred.

Examiner's reasoning

As to the ever-present issue of whether local lines should be permitted to grow into trunk-type systems, Henderson reasoned this way: "Passenger needs can best be met by maintaining the local service carriers as a provider of 'feeder service' . . . Since the local service carriers' systems are designed to fit into a nationwide network of trunk routes, it is obvious that the primary function of a local service carrier is to provide its passengers with service to the nearest trunk point where multiple services onward are provided rather than providing one-plane service to distant final destinations."

At the same time, however, Henderson saw a need for less restrictive certificates for local lines. "In order to develop a sound pattern of service to meet the needs of the entire area," he said, "it is believed that each local service carrier certificated in this proceeding should be given the maximum freedom in which to fully develop traffic in its area.

"Therefore, each carrier should be given a broadly drawn authorization free from unnecessary competitive interference in order that they may have the greatest freedom possible to meet and experiment with the expanding transportation needs in their particular areas."

Some cities on trial basis

As to the potential $2.5-billion addition to the subsidy bill to support the new services, the examiner indicated various cities would be on a trial basis.

"Although the traffic potential of many of the cities . . . is marginal, the cities were included primarily because of their severe isolation, and the inadequate surface transportation and poor highways.

"It therefore appears that it will be necessary to continue subsidy in this area for a substantial period until there is a public acceptance of the newly-authorized service. However, after a reasonable time the Board should reexamine the service at the cities with low traffic potentials with the view to determining whether there has been a steady rise in traffic sufficient to justify continuance of such service."

Meanwhile, carriers and other parties were given until mid-January to file exceptions and briefs to Henderson's proposal. The report, incidentally, was 672 pages, the most voluminous such report in CAB history. It cost CAB an estimated $550 simply to mail copies to the 106 parties involved.

But it is only the forerunner of other such reports expected within the next year or so. Other similar cases include the Great Lakes Area Case, the Piedmont Area Case, the Southeastern States Area Case and the Pacific Northwest Area Case. At the conclusion of these, the local service airline route map of the nation will be completely re-written.

At last: a no-show system that works

by Eric Bramley

THE NO-SHOW PROBLEM that has plagued the U.S. domestic airlines for years has been eased considerably.

Even those carriers that had claimed earlier that some phases of the so-called "no-show control plan" wouldn't work concede that there's been a vast improvement. The statistics show:

No-shows have dropped 49% since the first phase of the plan went into effect in September 1956. At that time, no-shows on first-class flights were 13.9% of boardings; on coach, 13.4%. In October 1957, these percentages had dropped to 7.1 and 6.8, respectively.

The number of people canceling space late (within three hours of departure) has jumped 56% on coach, 29% on first-class. This was to be expected. Customers are canceling rather than pay the $3 no-show penalty. The airlines have been able to re-sell one out of every four seats made available by late cancellations.

These statistics are based on periodic surveys made by the Air Traffic Conference, latest of which was in October.

What does the no-show reduction mean financially to the carriers? According to the measurement used by ATC, the airlines in July, 1956, were losing $24,000 for each $1 million of revenue because of coach no-shows. They were losing $12,000 per $1 million on first-class. In October, 1957, both coach and first-class had dropped to $6,000 per $1 million. It should be noted that all carriers do not agree that the ATC measurement method is accurate. Some think it's high, others low.

The now-show control plan went into effect as follows: minimum time limits on ticket pickups, Sept. 1, 1956; reconfirmation, July 14, 1957; the $3 no-show penalty ($1 on helicopters), Sept. 15, 1957.

Few complaints received

The big fear of some carriers—that the public would object strenuously to a penalty—has turned out to be groundless, according to carriers' answers to an AMERICAN AVIATION survey. Few complaints have been received. It is also reported that employes on the firing line at ticket offices and airports like the control system.

If there is some doubt whether a penalty should be assessed, airlines collect the $3 and request the customer to apply for a refund. The number of refund requests that have been honored is high.

One airline said 45% of requests are valid, another said 60%, a third granted 42 out of 141, a fourth 16 out of 48. (During the most recent ATC survey, 570,003 passengers were boarded and the penalty was assessed 2,592 times. This amounted to 0.37% of coach passengers, 0.49% of first-class.)

The high percentage of refunds results partially from the procedure followed—collect the penalty when in doubt and when the last-minute rush before departure doesn't permit a thorough check. It also results from faulty airline paperwork—records that aren't clear and complete.

How refund requests are handled

AMERICAN AVIATION'S survey showed that most carriers are following substantially the same system in the handling of refund requests. As explained by United Air Lines: "When a request for refund comes into Revenue Accounting, a list of no-shows furnished by all reservations offices is checked. If the person making the request is not listed as a no-show he is given a refund; if he is listed as a no-show he is advised that no refund is due.

"If the passenger subsequently furnishes additional information, further investigation is made by Sales or Passenger Service and a refund authorized if the facts indicate it is due. The latter type refunds are authorized for such reasons as incorrect departure times shown on tickets, determination that the passenger actually missed his flight due to a misconnection, etc."

There are some who believe that reconfirmation may prove to be the most important part of the control plan. One sales official, for example, said: "Since we experienced a one-third reduction in no-shows upon restoration of reconfirmation and only an 8% additional reduction with the advent of the penalty system, it is quite apparent to us that the reconfirmation rule is the procedure which provides a really effective control of no-shows and that the penalty plan contributes only small additional benefits."

Asked whether the no-show control plan has increased their cost of doing business, most officials answered in the affirmative but added that it was difficult to estimate the amount of the increase. One added: "There is no question that it has added to our workload but perhaps the reduction in no-shows offsets that cost."

Court refuses to stay CAB route awards

U.S. Court of Appeals, District of Columbia Circuit, has refused to stay route awards made to Western Air Lines and Bonanza Air Lines by CAB in the Phoenix Service Case. Frontier Airlines asked the stay pending court review of the CAB decision.

The awards became effective Nov. 26, and Western inaugurated service of its route—Denver/Phoenix/San Diego—on Dec. 1. Bonanza plans to start service Jan. 3, over its new Phoenix-Salt Lake City segment.

The court, meanwhile, has scheduled argument for Jan. 17, on FAL's petition to review the CAB decision.

How no-shows have decreased

The following table shows, in percent of passengers boarded, the effect of the no-show control plan:

		July 1956	Oct. 1956	Aug. 1957	Oct. 1957	Effect Since Control Started
Local No-Shows	C	5.9	4.4	3.7	3.1	–47%
	F	5.8	4.5	3.5	2.8	–52%
Your Line No-Shows	C	4.7	3.9	2.3	2.0	–57%
	F	4.5	4.2	3.0	2.3	–49%
Interline No-Shows	C	2.8	2.7	2.4	1.7	–39%
	F	3.6	3.2	2.9	2.0	–44%
Total No-Shows	C	13.4	10.0	8.4	6.8	–49%
	F	13.9	11.9	9.4	7.1	–49%
Lost Seats	C	3.13	1.45	1.36	1.05	–67%
	F	1.47	1.73	1.08	1.08	–26%
Late Cancellations	C	2.8	3.0	3.1	4.4	+56%
	F	3.8	3.7	3.9	4.9	+29%

C—Coach flights.
F—First-class

Local no-show: Any originating, continuing or return trip passenger who had some form of contact with local office at boarding city and thus indicated at the time his reservation was made, checked or reconfirmed that he intended to use it.

Your line no-show: Passenger arriving on your line who no-shows an on-line connection.

Lost seats: Each seat becoming available for resale within three hours of departure because of a no-show, late cancellation or misconnection is reported as "lost" only if (1) it remains unsold, and (2) the waiting list indicates a customer probably would have purchased the seat providing it had been available for resale at least three hours before departure.

Panagra sells luxury, frequency in South American service

by Anthony Vandyk

EVERY DAY of the year at 4 p.m. Eastern Standard Time a Panagra DC-7B leaves New York International Airport headed south. And almost every day at least one of the passengers on the flight looks up with a start when an announcement is made in Spanish that the aircraft is bound for Panama, Lima, Santiago and Buenos Aires as well as Washington and Miami.

What the surprised passenger does not know is that the National flight 701—New York-Washington-Miami—is part of Pan American's and Panagra's flights 701. This interchange schedule not only provides commuter service between New York and Washington but also between New York and the capitals of the South American west coast republics and Argentina.

Panagra's daily first-class flight to South America represents perhaps the most luxurious commuter service ever offered on a daily basis on such a long route. The airline pulls out every stop to emphasize service. Nothing but the best is the order of the day on "El Inter Americano," the name used for the first-class flights.

For passengers desiring a cheaper class of service, Panagra has a daily DC-6B tourist flight, "El Pacifico," which also operates under interchange arrangements with National and PAA from New York and Miami to Panama and points south on a daily basis.

Combats cut-raters

The combination of ultra-high luxurious first-class service and fast tourist service, operated with pressurized equipment, together with the advantage of a twice-daily frequency, is enabling Panagra to combat, to some extent, the effects of the cut-price services offered by various Latin American operators (AMERICAN AVIATION, Dec. 16).

Speed is a particular feature of both services. This writer was able to complete a full day's work in Washington and then take the evening El Inter Americano flight to Lima, arriving at 7:35 the next morning in time for a full day in the Peruvian capital.

The travel time between Buenos Aires and New York by the interchange service is 22 hours 40 minutes, as compared with 19 days required by the fastest steamship.

Panagra's service to South America will be considerably faster in 1960, when the airline plans to introduce its four Douglas DC-8s. In practice, however, it may not be possible for the jets to operate at all the major cities currently served on the north-south trunk route.

Despite grandiose paper plans of the countries concerned, the airport situation for jets does not look encouraging at Guayaquil, Lima, La Paz and Santiago de Chile. Unles the present programs are accelerated and more financing is found, Panagra and other carriers will only be able to serve some of these cities with jets by accepting heavy payload penalties.

This situation is particularly aggravating to Panagra, because it has poured millions of dollars into providing the west coast of Latin America with airports and air navigation facilities. Even today the airline still operates all air navigation facilities in Chile, Ecuador and Bolivia. In Bolivia it also operates eight airports.

Last month it was announced that the Argentine government had signed an agreement with Panagra for the installation of a network of very-high-frequency omni-directional range stations (VOR) in Argentina.

PANAGRA's TRUNK ROUTE today, from Panama to Buenos Aires, is little different from that operated in 1929, a year after the airline's formation. Panagra also operates feeder services in Ecuador, Peru and Bolivia.

Ancient and honorable history

Panagra's investment in South America dates back almost 100 years. W. R. Grace & Co., which owns 50% of Panagra, has been developing trade industry and transportation between the U.S. and the west coast countries of South America since the latter part of the 18th century.

The other 50% of Panagra is owned by Pan American World Airways. When the company was formed in 1928 it was indeed logical to couple W. R. Grace's knowledge of the west coast of South America with the aviation know-how of PAA. The full name of the company—Pan American Grace Airways—reflects the 50-50 ownership.

The beginnings of Panagra in 1928 were humble. Grace and PAA agreed to pay $15,000 for a small crop-dusting company established in Peru by Harold R. Harris who later was to become well-known in the airline industry. It was on Sept. 13, 1928, that the new airline, then known as Peruvian Airways Corp., started operations using a four-passenger Fairchild single-engine aircraft. Its first flight was from a race track in Lima to a football field in Talara, Peru.

Shortly afterwards operations were extended north to Guayaquil and in July 1929, Panagra was authorized by the U.S. Post Office Department to inaugurate mail service to Chile. Pan American carried the mail from Miami to Panama and then a Panagra amphibian flew it down the west coast of South America as far as northern Peru, where it was transferred to Fairchild equipment for the remainder of the distance to Santiago.

The most dramatic sector of Panagra's route is that from Santiago across the Andes to Buenos Aires. Today this operation is strictly routine—the airline has made more than 25,000 crossings of this highest mountain range in the western hemisphere—but in 1929 the task of getting across the mountains represented a formidable challenge.

Mail service over the trans-Andean route was started by Panagra in 1929 with a single-engine Fairchild equipped with no radio and provided with no weather reports. The pilot would climb up to 14,000 feet above Santiago, take a look at the pass through the range and, if the weather

A PANAGRA DC-7B operating the first class El Inter Americano service is seen in front of Lima's modern terminal building at Limatambo Airport. Unfortunately Limatambo will be inadequate for the jet age so the useful life of the terminal is limited.

were clear, would continue through to Argentina. Passenger operations over this difficult route started in October 1929 with Ford Trimotor equipment. This connection made it possible to fly from New York to Buenos Aires in a total travel time of 11 days!

Although in the intervening years travel time between New York and Buenos Aires has been cut from 11 days to 22 hours, Panagra's route system has changed very little in the 28-year period. Feeder services were opened in Ecuador, Peru and Bolivia, but the trunk route remained essentially what it is today (see accompanying map).

Panagra's official northbound terminal is Panama and its southbound terminal is Buenos Aires. Thanks to the interchange, operations are extended northward from Panama to Miami and New York. In fact, between 1946 and 1955 Panagra's route mileage decreased by 12%.

Employment totals 1,400

Through the years the airline has remained relatively small in size and many of the key personnel who were with the organization in the pioneering period are still with it. Panagra has only about 1,400 employes, including 104 pilots and 79 cabin attendants (all the stewards and stewardesses are Latin Americans). Its fleet—all Douglas—is also small: five DC-7Bs; five DC-6Bs; two DC-4s; and four DC-3s (powered with R2000s).

The DC-7Bs and DC-6Bs not only fly the Panagra system but are also used on the interchange to the U.S.—PAA and National contribute no aircraft in return. One of the DC-4s is used for an all-cargo service along the trunk route. The DC-3s, overhauled in Lima, are used entirely for feeder operations.

A look at Panagra's traffic statistics would not give the impression that the airline has such a small fleet. In 1956, it carried 143,222 passengers and operated 172,103,000 passenger-miles (more than Western Airlines). Its freight traffic in 1956 involved the performance of 4,029,161 freight ton-miles, making it a bigger freight carrier than Capital Airlines. Load-factors in 1956 were 57.36% for the DC-7B fleet, 61.75% for the DC-6B fleet and 65.21% for the DC-4 fleet.

Exceptional food

These load-factors are particularly creditable in view of the very high service frequency Panagra operates. There is no question that Panagra captures and holds its traffic by its superlative in-flight service.

Much of Panagra's reputation for superlative service is due to Mike Clavarino, who supervises the food service.

Based in Lima, Clavarino imports most of the foodstuffs that are used in Panagra's "gourmet galleys" from all parts of North and South America. He has even established a special farm near Lima high up in the mountains where pure mountain water is used for irrigation. The produce from this farm provides the vegetables used in Panagra's main flight kitchen at Limatambo Airport, Lima.

Meals served in flight by Panagra are as sumptuous as can be found on any airline, but Clavarino's organization also realized that at certain times a big meal is not always desired by passengers. For example, flying across the Andes between Santiago and Buenos Aires passengers are more interested in enjoying the spectacular scenery than in eating a large meal. Hence on this 2½-hour flight Panagra sets up in the lounge of its DC-7Bs a special buffet table consisting of rolled cold meats, cheeses, aspic salads, assorted vegetables and fresh fruits.

For children, who often do not appreciate seven-course luxury meals, Panagra has simple items such as fruit cup, hamburgers and pot pies on hand.

Superb service, twice-daily frequency and modern aircraft make Panagra's operation eminently successful. Unfortunately, however, the future of the airline is somewhat clouded by an anti-trust suit filed by the Justice Department in January 1955 to break up the 50-50 joint ownership of the airline.

Until this suit is settled, relations between the co-owners will continue to be uneasy, and Panagra will be unable to consolidate its past successes and follow the normal developmental trend of the air transport industry.

LA PAZ, 13,400 ft. above sea level, is world's highest commercial airport. AMERICAN AVIATION's International Editor Anthony Vandyk and llama stand in front of a Panagra DC-6B operating the El Pacifico tourist service. In background is the airfield's uncompleted terminal building.

Mexico increases domestic air fares by 15%

Domestic air fares in Mexico were scheduled to be increased 15% this month, a move that was approved by the government to compensate for rising costs of equipment and maintenance.

Meanwhile, Trans-Canada Air Lines filed tariffs with CAB to even off its fares to the nearest dollar, and to reduce the roundtrip discount from 10% to 5%, effective Jan. 1. This will results in a slight increase in revenues.

The even-dollar fares will also be an added convenience to TCA revenue accountants and ticket agents. Eastern, TWA and United have filed similar fares on segments where they compete with TCA.

CAB decision near in $67-million capital gains case

by Donald Frederick

CIVIL AERONAUTICS BOARD has taken under consideration—and soon will decide—the Capital Gains Case, in which the financial fortunes of a substantial segment of the airline industry hang in the balance.

Oral argument before the Board took place early this month. It was the final procedural step in the case, estimated to involve $67 million in industry funds.

As expected, the CAB staff and the subsidized segment of the U.S. air industry were on opposite sides. The $67-million figure represents the amount some 29 subsidized carriers estimate they will realize from the sale of 408 old aircraft (after 25% federal tax).

Board attorneys have consistently argued that as a matter of law and policy CAB should not permit retention of capital gains for capital needs.

The airlines, most of which were represented by Washington attorney James M. Verner, argue for full retention of capital gains from aircraft sales.

Bureau Counsel Milton H. Shapiro opened the oral argument by contending that legislative history, historical decisions and the testimony of the carriers themselves before Congress militated against the retention of capital gains for capital purposes. "There is no need for retention within the meaning of the Civil Aeronautics Act," he said.

Ruling out carrier arguments that capital gains were necessary to re-equip, Shapiro said: "Even if the carriers had been able to establish that the retained gains were required for re-equipment purposes, without corresponding reduction of subsidy, there is no authority in the Act which would permit the Board to ignore retained gains in the determination of subsidy."

Verner, who followed Shapiro, termed capital gains a "hedge against inflation."

"Ever since 1938," he maintained, "CAB has permitted subsidized carriers to retain capital gains experienced during closed rate periods (periods when a permanent mail rate has been established for a carrier) and the Board has not felt that such have resulted in excess profits."

Any change in this past Board policy, Verner contended, would result in a "penalty against the very weakest members of the air transport industry."

In concluding, Verner warned that confiscation of capital gains constitutes "an effective block in the path of re-equipment."

Examiner Paul N. Pfeiffer had assumed a middle ground in the case. In making his recommendations to the Board, he thought the subsidized airlines should be allowed to use capital gains to arrange new equipment financing. But he would require the eventual repayment of the funds to the government.

According to Pfeiffer's plan, carriers could choose between (1) full repayment of capital gains each year through appropriate subsidy reduction, or (2) an installment-type payback under which annual deductions would be made from depreciation expense and return on investment over the depreciable life of the equipment purchased. The examiner explained that the carriers, in his estimation, had not established a need for permanent retention of the funds.

Both Shapiro and Verner attacked the examiner's recommendations in their presentation to the Board.

The staff attorney said it would be a "monster to administrate." He charged that none of the parties supports it, "nor does it comply with the Act."

Verner complained that such a plan "just is not correct." He claimed it would amount to the creation of debt to the government at a high interest rate. "The interest rate," Verner explained, "would be high during the time the carrier will be deprived of the rate of return in the amount of capital gains."

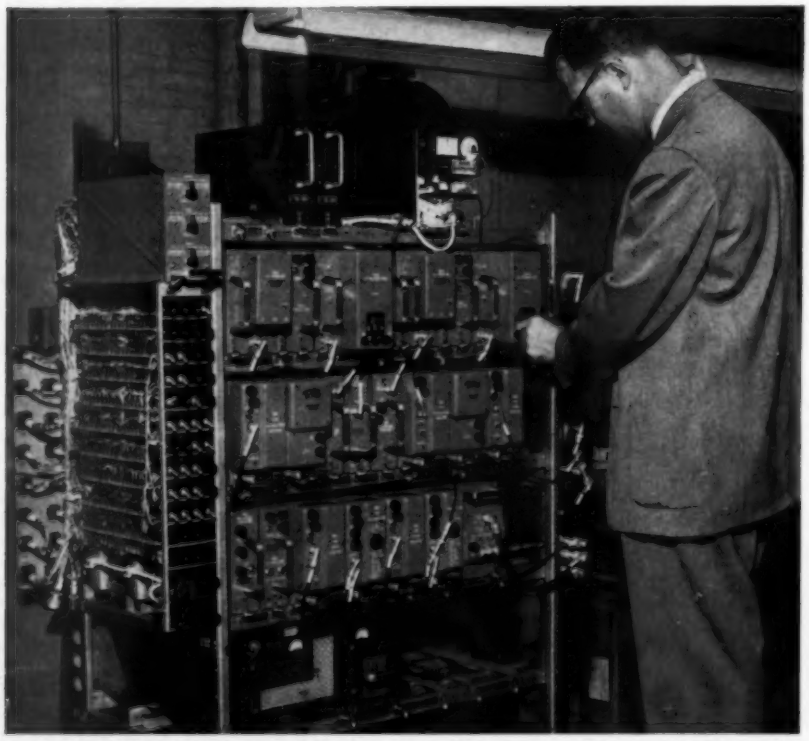
Verner was supported in his oral argument by other airline representatives.

Kelley E. Griffith, representing the Conference of Local Airlines, made three points: (1) the local service industry is in serious financial difficulty; (2) the DC-3 is at the core of the difficulty and this plane must be replaced; and (3) the permanent retention of capital gains from re-equipment is the most efficient, economical way to solve the re-equipment problem.

Henry J. Friendly, Pan American Airways, said: "This problem of the financing of jet equipment is not simply the carrier's problem, it is essentially the Board's problem . . . our foreign competitors are given export-import bank loans by our government to acquire the very jet equipment which we have not financed."

Gerhard A. Gesell, Pan American-Grace: "If we cannot keep the capital gains, our whole financial picture will

Radio equipment rack for Eastern Airlines' Electra



FIRST PICTURE of Eastern Airlines' radio equipment and racking system for use in the company's Lockheed Electras on order. Wilcox Electric Co.'s rack and CANARI equipment is being inspected by Truman Benson, systems design engineer with Wilcox. Bottom and top shelves contain Bendix weather radar and Collins integrated flight system equipment. Remaining shelf space is for DMET, additional Collins equipment and antenna tuning units. Racking method permits test before installation.

be substantially worse. We will be affected to the tune of at least $7 million, maybe $10 million on our borrowing powers."

Robert W. Oliver, representing Central, Mohawk and Alaska airlines and Chicago Helicopter Airways: "A policy of recapture by this Board, which would be effective and would foreclose any opportunity to have a gain without having the recapture seized, would cast a question mark on the ownership of these carriers in their property and equipment."

C. Edward Leasure, Continental Airlines: "Continental, with fingers crossed, is now in a closed rate without subsidy. We are carrying a local service line along with it, and the money involved is very important."

Lawrence Stenzel, Allegheny Airlines: " . . . irrespective of the treatment which capital gains receive as a result of this proceeding, these gains should not be recaptured insofar as they relate to disallowed investment. . . . Recapture under these circumstances . . . would amount to sheer confiscation."

Raymond Rasenberger, Trans Pacific Airlines: "TPA has a real genuine capital investment gain involved in this proceeding. Though it is a small carrier, the gain is substantial, $125,000."

With the completion of oral argument, the next step is for the Board to decide future treatment.

American, United furlough copilots and mechanics

Two major airlines are furloughing and laying off personnel.

American Airlines on Dec. 31 is furloughing 90 copilots, while United Air Lines has laid off 110 mechanics at its San Francisco maintenance base as well as making "modest" reductions in some other departments.

AA said its action was necessary because of low load factors now being experienced and which it expects will continue through part of next year. System load factor is less than 60%.

November passenger-miles dropped to 357,400,000, more than 4% under the same 1956 month, AA said. UAL, which showed an 8% gain in November, and TWA, up 3.8%, do not plan any pilot furloughs.

W. A. Patterson, UAL president, said that when reductions in work force are compared with total payroll of more than 20,000, "our action has been modest indeed."

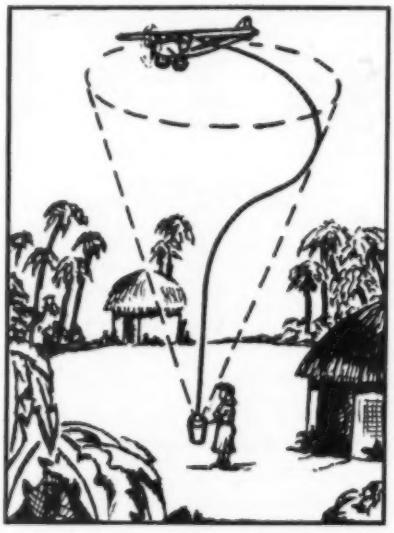
"This action was not necessitated by any one thing but by an accumulation of several things," Patterson said. "Our normal winter decline in business came earlier than forecast and was much more drastic than forecast; a pending request to extend the time between overhauls was approved; voluntary resignations were much lower than normal.

"The total impact of these factors caused us to have more employes than jobs."

SAM SAINT SAYS

How brother Nate's air-to-ground telephone-in-a-bucket was dropped to missionary's wife in Ecuadorean jungle

ON NOV. 13 word came out of a remote jungle area in eastern Ecuador that missionary Betty Elliot was in contact with three women of the savage Auca Indian tribe—the tribe that had killed her husband and four other missionary men less than two years before. Concern for Betty's safety was immediate and fully justified. Her husband and his four companions had been struck down by Auca spears just two days after a friendly contact with two women and a young man of the tribe.



When the news of Betty Elliot's precarious position reached the Missionary Aviation Fellowship Base some 50 air miles away, Hobey Lowrance (a former Reserve Captain for American Airlines and now a missionary bush pilot in Ecuador) rolled out his bright yellow Piper. Quickly he loaded aboard a large reel of phone wire, a canvas bucket and two field telephones. Hobey flew a beeline for the Oglan River where Betty was known to be.

As he flew he began to reel out the canvas bucket on the end of the twisted phone line. In the bucket was one of the phones. By the time he arrived over the jungle clearing the bucket was trailing some 1,500 feet behind the airplane. In the clearing a thousand feet below Betty's tall white figure waved. He saw the Indians watching.

Hobey put the Piper into a fairly tight circle over the clearing. At first the bucket on the end of the wire followed the airplane in its orbit. Soon it appeared to be off the inside wing tip, but going in the opposite direction. Now the bucket began to fall and, as it fell, to move toward the *inside* of the circle. After about three turns the bucket hung almost stationary beneath the airplane at the vortex of an inverted cone. By careful control of the turn Hobey lowered the bucket until it came to rest almost at Betty's feet. *In a moment she was talking by telephone to an airplane flying overhead.*

The technique of lowering a canvas bucket to a stationary point on the ground was invented by my brother, Nate. He used it many times to contact isolated outposts where there were no airstrips and no radios. He once talked to the President of Ecuador over his plane-to-ground telephone. Week after week he and his companions lowered gifts to the Auca Indians, who had no other contact with the outside world. After a time the Indians began to return gifts in the bucket. Two live parrots, among other things, were pulled up to the airplane in Nate's bucket.

On January 8, 1956, my brother, Betty Elliot's husband and three companions were killed by these same Auca Indians when they attempted a friendly contact on the ground to tell these Indians of Christ and the Gospel.

A group of engineers at Douglas Aircraft dropped everything for a time to study Nate's bucket. "We just about went out of our minds," said Harold Luskin, assistant chief aerodynamist, "trying to explain the behavior of the bucket mathematically."

How did Nate ever dream he could lower a canvas bucket quietly into a jungle clearing? We don't know. We know he felt keen frustration several times trying to decipher messages scrawled on a sandbar or trying to understand some pantomime performed desperately in a few seconds as the airplane flew over at tree-top height.

Nate invented and used his telephone from the sky. He picked up weights as heavy as 70 pounds. But he dreamed of other uses. One wonders whether Douglas and others will discover how to pick a man up out of the sea? Or lower supplies to men marooned on a mountain where parachuting is impracticable? Or allow secure and secret communications with soldiers surrounded or isolated from normal ground contact?

Summary of domestic airline traffic for October 1957 *vs.* October 1956

Compiled by American Aviation Publications from Official CAB Data

Airlines	Revenue Passengers			Revenue Passenger Miles (In Thousands)			Total Ton-Miles Rev. Traffic			% Available Ton-Miles Used	
	1957	1956	% Change	1957	1956	% Change	1957	1956	% Change	1957	1956
DOMESTIC											
American	678,366	732,209	– 7.3	428,497	440,871	– 2.8	51,207,817	52,858,507	– 3.1	53.9	60.7
Braniff	184,487	164,029	12.5	79,182	66,636	18.8	8,456,994	7,154,861	18.2	48.3	54.5
Capital	368,736	309,468	19.2	143,717	109,304	31.5	15,027,802	11,412,796	31.7	49.8	48.6
Continental	75,305	67,700	11.2	34,085	24,677	38.1	3,560,825	2,575,364	38.3	41.6	49.4
Delta	234,254	217,530	7.7	112,862	96,512	16.9	12,372,851	10,677,884	15.9	52.4	53.1
Eastern	682,946	625,468	9.2	342,994	279,291	22.8	36,002,371	31,259,425	15.2	53.2	44.3
National[1]	16,555	96,898	–82.9	9,571	59,443	–83.9	1,055,467	6,778,212	–84.4	33.6	59.1
Northeast	70,650	50,390	40.2	27,518	10,063	173.5	2,816,338	993,190	183.6	36.3	58.4
Northwest	123,369	118,862	3.8	80,781	75,594	6.9	9,239,919	8,877,764	4.1	45.1	55.8
Trans World	405,362	392,947	3.2	313,650	295,717	6.1	34,009,873	32,840,958	3.6	50.4	57.5
United	539,969	554,340	– 2.6	396,222	381,217	3.9	47,101,310	45,700,471	3.1	55.0	60.4
Western	119,226	107,871	10.5	57,704	51,822	11.4	6,165,564	5,530,073	11.5	49.5	55.4
TOTALS	3,499,725	3,437,802	1.8	2,026,783	1,891,147	7.2	227,017,131	216,659,505	4.8	51.7	55.3
INTERNATIONAL											
American	9,552	11,937	–19.9	6,766	8,280	–18.3	1,005,054	1,206,264	–16.7	62.9	60.7
Braniff	3,775	2,524	49.6	8,117	5,254	54.5	999,947	696,502	43.6	45.7	49.9
Delta	5,450	4,440	22.7	6,640	5,160	28.7	794,355	593,886	33.8	50.6	46.1
Eastern San Juan	20,773			29,856			3,267,163			57.2	
Bermuda	3,507	21,143	32.3	2,742	28,428	35.0	287,064	3,175,455	32.5	55.3	53.7
Mexico	3,688			5,782			654,378			48.3	
National[1]	1,962	6,108	–67.9	3,174	3,545	10.5	347,888	412,291	–15.6	47.6	38.1
Northwest	9,798	10,201	– 4.1	22,571	20,221	11.6	4,034,787	4,532,096	–11.1	66.0	71.5
Hawaiian	1,076	786	36.9	2,850	2,001	42.4	324,226	241,303	34.4	54.6	49.4
Panagra	11,688	11,916	– 1.9	13,645	14,145	– 3.5	2,009,244	1,974,286	1.8	56.4	58.9
Pan American											
Latin America	93,284	91,129	2.4	99,656	92,583	7.6	16,232,220	13,107,473	23.8	64.3	62.1
Atlantic	95,706	86,192	11.0	119,416	110,661	7.9	16,069,765	14,821,080	8.4	59.2	61.6
Pacific	22,950	26,952	–14.9	89,678	83,962	6.8	12,145,038	11,224,197	8.2	65.6	68.4
PDX/SEA-HON	1,332	1,405	– 5.2	3,804	3,801	0.1	409,950	403,302	1.6	47.8	36.2
Alaska	4,235	5,921	–28.5	5,002	6,512	–23.2	720,162	1,048,433	–31.3	60.3	50.2
Trans World	28,068	25,350	10.7	72,940	63,538	14.8	9,254,801	8,353,110	10.8	60.5	67.9
United	7,655	7,337	4.3	19,048	18,214	4.6	2,128,591	2,015,211	5.6	58.1	58.0
Western	1,817	[2]	....	2,825	[2]	....	318,061	[2]	....	54.1	[2]
TOTALS	323,908	311,150	4.1	507,858	460,503	10.3	70,268,518	63,160,284	11.3	61.1	62.4
LOCAL SERVICE											
Allegheny	42,188	38,713	9.1	7,230	6,394	13.1	736,789	652,433	12.9	44.1	49.9
Bonanza	13,314	12,043	10.6	3,000	2,775	8.1	297,931	280,874	6.1	42.3	47.2
Central	11,315	10,138	11.6	2,260	1,974	14.5	230,521	201,844	14.2	32.1	34.8
Frontier	20,232	18,120	11.6	5,421	4,903	10.6	618,610	554,430	11.6	65.6	60.9
Lake Central	15,449	14,606	9.8	2,458	2,347	4.7	255,382	233,015	9.6	40.6	45.1
Mohawk	43,642	40,547	7.6	8,296	7,240	14.6	846,950	723,210	17.1	49.1	52.3
North Central	60,778	55,236	10.0	9,799	8,735	12.2	997,748	891,124	12.1	47.2	49.9
Ozark	39,852	34,664	14.9	6,600	5,377	22.7	675,818	548,704	23.2	46.6	44.7
Piedmont	38,919	36,657	6.2	7,960	6,897	15.4	810,609	704,314	15.1	56.4	53.6
Southern	19,401	17,822	8.9	3,692	3,210	15.0	380,416	331,079	14.9	39.6	43.8
Southwest	30,445	27,136	12.2	6,613	5,975	10.7	653,216	590,614	10.6	50.3	53.3
Trans-Texas	22,274	21,776	2.3	5,137	4,957	3.6	541,793	523,000	3.6	42.5	38.8
West Coast	22,573	19,141	17.9	4,043	3,412	18.5	397,076	318,275	24.8	45.8	57.4
TOTALS	380,382	346,601	9.7	72,509	64,196	12.9	7,442,859	6,552,916	13.6	47.1	48.4
ALASKAN SERVICE											
Alaska Airlines											
States-Alaska	589	363	62.3	906	555	63.2	297,987	327,260	– 9.1	42.2	46.1
Intra-Alaska	4,943	5,864	–15.7	1,425	1,615	–11.8	230,556	446,738	–48.4	41.2	52.9
Alaska Coastal	4,381	3,784	15.8	387	341	13.5	48,404	42,477	14.1	67.6	73.5
Cordova	1,645	1,519	8.3	250	270	– 7.4	123,937	218,912	–43.4	49.4	61.3
Ellis	4,361	5,311	–17.9	260	269	– 3.4	30,758	32,322	– 4.8	72.9	72.5
North. Consol.	1,301	2,207	–41.1	442	759	–41.8	149,274	646,686	–76.9	64.5	86.6
Pac. Northern	8,679	8,919	– 2.7	7,882	6,505	21.2	1,227,584	1,098,989	11.7	56.4	61.5
Reeve	803	674	19.1	641	259	147.5	144,462	96,189	50.1	48.8	68.4
Wien	2,035	3,750	–45.7	620	1,466	–57.7	245,968	942,769	–73.9	60.9	91.2
TOTALS	28,737	32,391	–11.3	12,813	12,039	6.4	2,498,930	3,852,351	–35.1	52.7	67.3
HELICOPTER SERVICE											
CHI Helicopter	7,885	....	....	133	....	....	14,552	2,713	436.4	31.4	30.3
Los Angeles Airways	2,437	2,240	8.8	96	86	11.6	15,955	13,284	20.1	58.2	49.9
N.Y. Airways	6,211	5,150	20.6	117	101	15.8	14,884	12,971	14.7	40.2	41.9
TERRITORIAL SERVICE											
Caribair	16,386	11,967	36.9	1,096	807	35.8	118,368	70,560	67.8	57.0	55.7
Hawaiian	30,831	30,519	1.0	4,603	4,198	9.6	508,579	480,783	5.8	54.4	56.4
Trans-Pacific	15,533	16,318	– 4.8	2,269	2,060	10.1	192,716	176,941	8.9	56.6	57.6

[1] NAL 1957 figures reflect strike period of 32 days.
[2] Western inaugurated Mexico service July 1957.

Explanatory note for airline passenger statistics

Because of changes in reporting requirements for the year 1957 and subsequent years, passenger totals as filed by the airlines with CAB cannot accurately be compared with those of 1956 or previous years. Thus, previous statistical reports this year which showed percentage gains or losses in airlines passenger totals should be disregarded. In reports for the remaining months of 1957, AMERICAN AVIATION will show only the 1957 passenger figures as reported by the carriers. Beginning with the report for the first month of 1958, however, comparisons with 1957 will be appropriate.

TRANSPORT CHANGES

John A. Parks, station manager at New Orleans for Pan American World Airways, transferred to Miami as asst. to the supt. of stations; **Darvon D. Montgomery** becomes station mgr. at New Orleans, Moisant International Airport.

Charles W. Oxberry named sales officer for British Overseas Airways Corp.

TRANSPORT TRENDS

Reduced rate of traffic growth and continued declining profits face the nation's airlines in 1958. Early predictions are that revenue passenger-miles will increase about 7%, compared with a 14% gain in 1957. In the absence of a sizable fare increase, there's no outlook for reversal of the falling profit trend that saw airlines' 1957 net reach only half that of the previous year.

1958 is CAB's 20th year—and will be its most crucial one. Board decisions in such cases as the General Fare Investigation, Capital Gains case and Local Service Rate-of-Return case will go far toward deciding the fate of the U.S. airline industry. Also, the decisions will determine whether the 1938 Civil Aeronautics Act is too outdated to cope with the fast-changing aviation business. On top of this, CAB is faced with its most penetrating Congressional investigation by the Moulder committee. Outcome will decide what legislative changes should be made in the regulatory system.

Announcement is expected momentarily that CAB has won its intra-governmental fight with the military over civil control of the nation's airspace. CAA Administrator James Pyle will administer the new rules, subject to over-riding authority of the five-man CAB. New system will replace Air Coordinating Committee machinery under which the military, through exercise of a single veto, had final control over airspace. New rules are flexible enough, however, to give military control in times of emergency.

One of the intricate financial points involved in airline pleas for fare increases is that earnings need to be better now than when original financing for jets was arranged. Reason is that most additional financing, if it can be arranged, must be subordinate to previous debts. With airline earnings dropping instead of increasing, lenders are not about to take a chance on subordinate loans.

Direct air service between London and Moscow is likely to be started next spring by Aeroflot and British European Airways. Bilateral agreement between United Kingdom and USSR was signed in London Dec. 19. It permits operation of flights between the British and Russian capitals via Copenhagen. BEA will use Viscounts, Aeroflot Tu-104s.

Man to watch: Harding L. Lawrence, who was vp-traffic and sales of Pioneer before it merged into Continental Air Lines, is moving up steadily in the CAL organization. His new title is vp-executive administration and sales.

U.S. and foreign airlines will save $1 million a year in paperwork as a result of U.S. elimination of the requirement that airlines furnish passenger manifests on all international flights. Saving applies only to U.S. entries and departures; it will be much larger if other nations enter reciprocal agreements with U.S. to abolish the manifest. Some European countries did away with the requirement some time ago. However, because of U.S. rule, they continued to require one for U.S. travel.

Under the new set-up, U.S. immigration, customs and public health officials secure their information from the standard embarkation-debarkation cards filled out by all travelers. And airlines are relieved of the bothersome task of typing manifests in the last moments before departure.

Quesada asks new 'hard look' at air traffic control; no quick and easy panacea in sight, he warns

The U.S. "clearly is at the crossroads" in air traffic control and the time has come for the "hard look" rather than the "quick fix" of the past, Elwood R. Quesada, chairman of the Airways Modernization Board says.

"There are many vested interests to be considered," he told the AMB Symposium at Philadelphia. "One of the most difficult problems within the federal government today is to distinguish patterns of agreement and disagreement in the aviation community, and assign to each a true and constructive value.

"I urge on all of you the necessity of restraint."

Keynoting the Franklin Institute-sponsored meeting, Quesada pointed to the ineffectiveness in the past of interested agencies trying to resolve traffic control problems around committee tables in Washington.

"The measured data of field experiments in the use of new systems has been conspicuous by its absence over the past decade," he said, adding that it is mandatory that future deliberations be illuminated by results of joint tests in the field.

Reporting on the status of AMB's organization and program, James L. Anast, deputy technical director, said total amount of fiscal 1958 funds transferred to AMB from Air Navigation Development Board and military projects is now more than $10-million. Other transfers are being processed and sufficient funds will be available through fiscal 1958.

At present, 15 projects are being incorporated into AMB. Three of the high-priority projects: data processing and display equipment development for improved air traffic control in the New York center; flight experimentation to increase acceptance rates of airports, and measurement of ATC system performance within a 50-mile radius of Idlewild. Latter is known as "Black Friday" analysis.

AMB will soon award a contract for the data processing and display equipment. Industry estimates say it will be for about $10-million. Of 14 proposals received, four are said to be runners-up for the award.

One of the tie-in groups is Radio Corp. of America, Sperry-Rand Corp. and Airborne Instruments Laboratory. Plan of this group would be for RCA to handle communications work, Remington-Rand data processing, AIL displays and Sperry-Gyroscope would act as overall systems engineering manager.

Answering reports that AMB is passing the buck to manufacturers on part of ATC system development (AMERICAN AVIATION, Dec. 2, p. 29), Anast said: "We are not asking contractors to design the air traffic control system.

"AMB is asking for experimental equipment for data processing and display so that AMB can carry out necessary experimentation."

For the Air Transport Assn., Milton W. Arnold, vp-operations and engineering, cited these problems confronting AMB: Funds; staff; internal harmony; airspace use with safety and flexibility within economic bounds of AMB's Phase I and II programs; protection and guarantee of communication frequencies for both phases; utilization of technical know-how available to electronics industry, and government utilization of the knowledge of airspace user and airport operator.

Arnold singled out airspace use and planning and coordinated use of communications frequencies as presenting the greatest danger of failure by AMB and aviation. These, he said, are not the sole responsibility of AMB.

"The CAB has stepped into the airspace fracas and, so far, it is holding on to the tail of this raging demon. Office of Defense Mobilization, Interdepartmental Radio Advisory Council and the Federal Communications Commission are issuing reassuring statements of 'well-coordinated planning' and are confident there never will be another DME/TACAN hassle or another airborne transponder problem."

Joseph T. Geuting, Jr., information chairman, General Aviation Facilities Planning Group, cited the need for attention to the Curtis Committee's report that the major portion of overall future demand for air traffic control will stem from an expected increase of 400% in general aviation.

Geuting said this compares with the Curtis report estimate of an expected increase in airline movements of 50% by 1975. This means, he said, that airways planning must not only increase capacity but bring about more simplification than ever before.

Airborne equipment of size and cost to meet general aviation needs for the new ATC environment must be supplied, Geuting said, and this potential market will be the largest available to manufacturers and distributors.

Geuting contends that air vehicles and the air-ground environment in which they operate must be planned together. He recommended that AMB set up machinery to explore the ramifications of highlift devices, VTOL, STOL and other short range vehicles, supersonic aircraft, atomic powered aircraft and space ships.

These types and propulsion de-

Bristol tests turbines in helicopter rig

TWO NAPIER GAZELLE free turbine engines are being tested in a ground rig in tandem rotor configuration. The engines will be used on production versions of the Bristol Type 192 helicopter. Ground rig is capable of simulating gear box, transmission and steady flight loads.

velopments will influence navigational, ATC, communications and airport development, Geuting pointed out, and it is because airports are financed on a 20-30 year basis that effects of future vehicles on airports must be known now.

Curtiss-Wright to get hearing in rental case

Curtiss-Wright Corp. will have an opportunity to present evidence in justification of its refusal to pay more than $5 million which Rep. Edward Hebert (D-La.) says the company owes the Air Force for rental of machine tools used in production of aircraft engines for commercial use. The Armed Service Board of Appeals has scheduled a hearing Jan. 7.

Roy T. Hurley, chairman and president of C-W, termed the rent demand exorbitant, unjustified and unfair, and said the company had disputed the amounts claimed.

Hurley said: "The General Accounting Office in its report did not state the details of the respective claims of the Air Force and Curtiss-Wright. Any ex-parte comment furnished the press by one holding a high government position concerning the validity of the government's claim prior to the trial of the entire case is an affront to Curtiss-Wright and can only be justified as an effort to prejudice this contractor in the eyes of the Board of Contract Appeals, and should be denied by all fair-minded people who have been brought up under a democratic system of jurisprudence."

The Government Accounting Office released the charge stating: "The contractor has been using Government-owned facilities in commercial production almost from the inception of the facilities contract in 1950, but the contracting officer has been unable to collect rent for such use, although the contract provides for a rental charge."

Defense sets limit on cost contracts

All new cost-reimbursement contracts of $250,000 or more will be subject to the new 80% military payment limitation for work in progress. The Defense Dept. established the minimum in guidance issued to the services for preparation of new procurement regulations, supplementing DOD Directive No. 7800.6, issued in November.

The minimum applies to all new materiel procurement contracts but will be just one of the factors utilized in studying the possible amendment of existing contracts. In this area, consideration will be given to delivery dates, contractors' willingness to accept an amendment, dollar value, etc.

Minimum does not apply to research and development, hardship cases, no-fee contracts and institutional agreements.

Airlines score 14% traffic increase for '57, but profits are off 56% from a year ago

New traffic records and sharply reduced profits marked the operations of the U.S. scheduled airline industry in 1957.

Domestic trunklines increased their revenue passenger-miles by 14.2% (about the same gain as shown in 1956 over 1955), upped their total revenues by 13.5%, but realized only $25,373,000 net profit, or 56% less than in 1956. Operating expenses climbed 19.2%.

The 1957 results were compiled by the Air Transport Assn. from nine months' actual figures and estimates for the last three months.

Airfreight showed a big increase this year. Freight ton-miles of domestic trunks were up 22.4%, more than double the 1955-56 growth. All-cargo lines increased 22.3%.

The ATA figures show:

The entire U.S. industry (trunk, local service, helicopter, international,

Estimated 1957 traffic of scheduled airlines

(in thousands)

Traffic	1957	1956	% increase
Total scheduled airline industry			
Revenue passenger-miles	31,522,054	27,615,179	14.1
U.S. mail ton-miles	161,720	152,503	6.0
Express ton-miles	47,712	52,666	(9.4)
Freight ton-miles *	540,815	451,178	19.9
Revenue ton-miles	**4,063,955**	**3,547,352**	**14.6**
Domestic trunk			
Revenue passenger-miles	24,716,465	21,643,141	14.2
U.S. mail ton-miles	97,751	91,686	6.6
Express ton-miles	43,481	49,711	(12.5)
Freight ton-miles	233,352	190,595	22.4
Revenue ton-miles	2,763,145	2,452,469	12.7
Local service			
Revenue passenger-miles	756,511	633,224	19.5
U.S. mail ton-miles	1,639	1,570	4.4
Express ton-miles	1,652	1,687	(2.1)
Freight ton-miles	2,153	1,624	32.6
Revenue ton-miles	79,257	66,534	19.1
Helicopter			
Revenue passenger-miles	3,420	1,571	117.7
U.S. mail ton-miles	95	91	4.4
Express ton-miles	35	34	2.9
Freight ton-miles	15	7	114.3
Revenue ton-miles	479	277	72.9
International			
Revenue passenger-miles	5,804,202	5,116,448	13.4
U.S. mail ton-miles	57,408	55,153	4.1
Cargo ton-miles	124,790	109,225	14.3
Revenue ton-miles	825,915	728,423	13.4
Alaskan			
Revenue passenger-miles	151,794	136,920	10.9
U.S. mail ton-miles	2,662	2,372	12.2
Cargo ton-miles	7,469	7,944	(6.0)
Revenue ton-miles	34,015	44,696	(23.9)
Territorial			
Revenue passenger-miles	89,662	83,875	6.9
U.S. mail ton-miles	67	62	8.1
Cargo ton-miles	1,488	1,475	.9
Revenue ton-miles	9,087	8,779	3.5
All cargo			
U.S. mail ton-miles	2,098	1,569	33.7
Express ton-miles	2,544	1,234	106.2
Freight ton-miles	171,548	140,308	22.3
Revenue ton-miles	352,057	246,174	43.0

( ) decrease

* Includes cargo (express and freight) of Alaskan, International and Overseas Airlines.

1957 Revenues* of domestic trunk airlines

(in thousands)

Trunks

Operating Revenues	1957	1956	% increase
Passenger	$1,298,684	$1,142,201	13.7
U.S. Mail	34,018	31,594	7.7
Express	15,175	18,102	(16.2)
Freight	51,631	42,172	22.4
Other	32,751	26,153	25.2
Operating revenues	1,432,259	1,260,222	13.7
Public service revenues	1,127	2,609	(56.8)
Total revenues	**1,433,386**	**1,262,831**	**13.5**
Operating expenses	1,385,782	1,162,231	19.2
Net operating income	47,604	100,000	(52.7)
Net profit	**$ 25,373**	**$ 57,712**	**(56.0)**

* Based on 9 months actual, last three months estimated.

Alaskan, territorial and all-cargo) performed 31.5 billion passenger-miles, up 14.1%. Freight increased 19.9% to 540,815,000 ton-miles. Express ton-miles, affected by a Railway Express Agency strike during the year, dropped 9.4%.

Helicopter passenger-miles skyrocketed 117.7%, local service gained 14.2% and international 13.4%.

Domestic trunks' total revenues reached $1,433,386,000, up 13.5%, while operating expenses were $1,385,782,000, up 19.2%. Net profit of $25.3 million was 56% under the $57.7 million of 1956.

Passenger revenue comprised 90.6% of total revenues. Subsidy payments declined 56.8% to $1.1 million for the trunks.

ATA president Stuart G. Tipton, noting the need for a fare increase, pointed out that the trunks' $25.3-million profit on $1.4 billion revenues compared with a 1952 net of $53.5 million on $768 million.

President redesignates Durfee and Gurney

James R. Durfee has been designated by President Eisenhower to serve again in 1958 as CAB Chairman and Chan Gurney will repeat as Vice Chairman. The designations, as distinguished from membership terms, are required annually.

For Durfee, whose membership term runs through 1960, it marked the third consecutive time he has been designated chairman. Only one man, L. Welch Pogue, received the post more often—five times—and one other, Joseph J. O'Connell, received it three times.

National, Eastern ask reduced coach fares

National Airlines and Eastern Air Lines have asked CAB to approve reduced fares for roundtrip night-coach service between major northeastern points and cities in Florida. Fares are 20% under present night-coach fares and would become effective January 13 for National and January 17 for Eastern.

They would be limited to designated mid-week days and to trips completed within a 16-day period. Southbound, fares would apply to night coaches departing Sundays, Mondays and Tuesdays; northbound on flights departing Tuesdays, Wednesdays and Thursdays.

One-way portion of the through roundtrip fare between Washington and Miami, for example, would be $35.85 as compared to the present night coach fare of $39.80. Reduction in the New York-Miami fare would be to $39.60 from $44. Generally, the new fares average about 3.5¢ per passenger mile.

UAL plans to order 51 Boeing 720 jets

United Air Lines expects to order 40 more Boeing 720 medium-range jets for a total of 51, president W. A. Patterson said in Seattle at the signing of a $39.7-million contract for the first 11 aircraft.

UAL recently increased its Douglas DC-8 order from 30 to 40. These, added to 51 Boeing 720s, would give the carrier a jet fleet of 91.

James Austin, Capital vp, to become NEA president

Capital Airlines' two top sales officials have moved to Northeast Airlines, and there were reports that a few other members of the Capital sales staff may also join NEA.

James W. Austin resigned as Capital's v.p.-traffic and sales and will become NEA president and a director. George Gardner, who has been NEA's president for 10 years, will be named board chairman and will continue as chief executive officer. Paul F. Collins, board chairman and one of the company's founders, will become chairman of a new advisory committee. These changes will not be formalized until next March's stockholders' meeting, but Austin will assume his duties about Jan. 1.

Nelson B. Fry resigned as Capital's assistant v.p.-traffic and was elected v.p.-traffic and sales of NEA. He has been in the airline industry 22 years and with Capital since 1948.

AA drops "living room" look for Electra cabin

American Airlines has scrapped its plans for a radically new "living room" interior for its Lockheed Electra turboprops and has settled on a more conventional 68-passenger-plus-lounge layout.

AA decision reportedly stems from the inflexibility of the compartmentalized approach, particularly as it might have affected future modifications to high density arrangements. In the living room layout, partitions had to be tied into airplane structure, thereby complicating any future redesign.

In the revised AA plan, the Electra will have two abreast seating and will feature an 8-inch wide table on the center armrest of each double seat. Center aisle will measure 22 in. wide, a carry-on luggage compartment will be added, and underseat stowage provisions similar to those of present DC-6s will be included.

American originally announced plans for the living room interior in October 1956 at which time it incurred a three-to-four month delay in deliveries to make the change possible.

CAA shakes up press staff; Nathan resigns

A major shake-up in Civil Aeronautics Administration's press and publications office, resulting in the resignation, retirement or transfer of all but one of the agency's press staff, will go into effect Jan. 12.

Raymond Nathan, CAA press chief, has resigned in the face of a demotion and transfer to Kansas City. Charles Planck was offered the post of assistant to the administrator either in Kansas City or Alaska region.

The job held by Lee Willis was abolished, leaving only Howard Bingham of the original staff handling CAA press duties under acting chief Preble Staver.

Meanwhile, signs of new Capitol Hill interest in the CAA personnel situation became evident. All involved in the press staff shake-up reported were called for interview by the Senate Post Office and Civil Service Committee staff, although there was no formal indication that the Senate group would act in the situation.

Earlier, the House counterpart of this committee reportedly was monitoring other phases of CAA's personnel management policies and is understood to have interviewed at least one displaced official.

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SIDELIGHTS

Haight's Folly

There's one aircraft official who will know better next time! Hector Haight (Hughes Aircraft) walked into the banquet of the Aircraft Industries Association export committee meetings at the El Mirador in Palm Springs recently and asked the head waiter if wine was being served. "No," said the captain, "but the hotel has a fine cellar."

"Let me taste your best," Mr. Haight said, with a grand flourish. He approved the captain's selection and said, "Okay, let's have some." A bustling of waiters followed, glasses were placed all around for well over a hundred people, and wine served. Then a check for $70 was put in front of Mr. Haight who had merely intended ordering one bottle for only his table. After the initial shock, Maj. Gen. Lucas V. Beau (Consolidated Diesel Electric Corp.) and G. R. Stanion (Kollsman Instrument) chipped in and split the check.

Seventy years young

Retired Reuben H. Fleet, known universally as Major Fleet from his Army service many years ago, and who built up Consolidated-Vultee Aircraft Corp. to become the largest firm of its kind in the world just before World War II, is living in Palm Springs, Calif.

Now 70, he is as active and alert as ever, plays a good game of golf, and reads without glasses. Among other things he's putting 43 children (no relatives) through school at his expense, and is a great-grandfather on his own. He and his attractive wife Eve (his third) spend their summers in San Diego.

Hah! Capitalistic methods!

Reports say that the Soviet Union will display its new Tu-114 turboprop transport at the world's fair in Brussels next year—for the duration. This means taking down trees and telephone and power lines on the route from the airport to the fair grounds. Who else but the Russians could afford to put a big transport on exhibition for such a long time?

Why it pays to pay attention

General Electric's John B. Montgomery was recalling at a luncheon table the other day the trials and tribulations of GCA during Air Transport Command days in World War II. One night a DC-4 ATC pilot was coming into the Azores from the west. Santa Maria airport is high on a bluff overlooking the sea. The pilot was coming in fine until suddenly he asked the boys on the ground why they had turned out the runway lights.

"The lights are on, you fool, get your airplane high enough above that bluff so you can see 'em," the ground replied. The pilot had only a few moments to do so—but he made it. After that the pilot paid closer attention to GCA approach.

THERE WERE no complaints about the food when new executive dining room for Lockheed's California Div. at Burbank opened. Chef was Burt Monesmith, division's vp-general manager.

Polar commuting record

Can anyone top this record? O. Ben Marble, advertising manager for Douglas Aircraft, who also has charge of films, has flown over the North Pole three times and the South Pole four times, all on filming expeditions in cooperation with the military services. Ansel Talbert, military editor of *The New York Herald-Tribune*, incidentally, is believed to be the first aviation writer to have flown over both poles.

Nerves still intact

One of our editors had a cup of coffee recently with Capt. Dale Welling of Frontier Airlines in Phoenix, and asked Welling if he had regained any of the ten years' life he lost when his DC-3 lost 12 feet of one wing when the plane hit the side of a canyon during a strong downdraft some time ago.

"Some, but not much," Welling replied.

But he's still flying that 80 hours a month. His experience 30 miles north of Phoenix is one of the most remarkable on record—losing 12 feet of wing and flying it on to Sky Harbor Airport safely with good load of passengers. Tribute to both pilot and the DC-3.

Watch that spelling, please

One of the things that keeps Northrop Aircraft people hopping and exploding is the number of writers and proofreaders who spell the company name Northrup. Imagine the surprise of Whitley C. Collins, the president, when he entered his office one day and found a new secretary who had her name prominently displayed on her desk. You guessed it—her name is Marian Northrup. "So you're the one who's the cause of all this trouble," he said jokingly but with a straight face, half-scaring the poor gal to death.

Waistline watcher

Conversation between two Navy pilots overheard at a coffee break at Point Mugu, Calif.:

"Have another doughnut?"

"No thanks. Haven't had my physical . . . besides these jet cockpits aren't getting any bigger."

Class system for cars

Promotion-minded Earl Smalley, president of Couture Rent A Car, has introduced something new into the car rental field—two classes of service. The new Econocar, which he says is similar in concept to the airlines' coach flights, is a "rental car without fancy trimmings at a budget rate." It features Plymouths, Chevrolets and Fords, with basic insurance coverage, but without gas, pickup and delivery, or charge privileges. The other plan offered by the Miami Beach company is called Blue Ribbon and features a number of extra services.

Explanation: individuality

Lots of people want to know why there are so few consolidated ticket offices and downtown departure terminals in the U.S. Reason: almost always there's at least one airline that objects. One of latest efforts to consolidate for public convenience was in Denver. One airline balked, so project is dormant, although a building is available. To date most airlines prefer individual identification although public would prefer joint efforts.

Why Beall got clipped

Wellwood Beall, senior vice president of Boeing Airplane Co., is sporting a crew haircut. And for a good reason. Some time ago he made a bet with a friend that if Boeing could sell some jet transports to United Air Lines, he'd trim his hair. Boeing did. And Beall did.

Summary of U.S. all-cargo airline operations for nine months ended Sept. 30, 1957

WEST COAST TALK

by Fred S. Hunter

Convair 880's best speed altitude 23,000-25,000 ft.; San Diego runway extension may cost $26 million

ALTITUDE at which Convair expects 880 purchasers to do most of their flying—23,000 to 25,000 feet—happens to be this jet airliner's best speed altitude. Most economical altitude, of course, is higher—approximately 35,000 feet—but only the longer-range flights will offer the opportunity to get in enough cruise at this altitude to pay to climb up. In a flight stage such as New York-Chicago it will be cheaper both in time and in money to fly at a cruising altitude around 25,000 feet. Convair, incidentally, is spending about $30,000 in refurbishing its 880 Mockup at San Diego. A portion of this amount is to replace two rows of mockup seats with prototype seats, but most of the cost is to freshen up the structure. Mockups take quite a beating as people mill through and they need new carpeting and other fittings to retain that bright "showcase" look to impress prospective customers.

If it turns out that the only way San Diego can solve its airport problem is to keep Lindbergh Field and make an extension out into the bay for an instrument runway, it would line up said runway to go right through Convair's new windtunnel now being completed. It would cost about $13 million for this and other Convair facilities that would be affected. It would cost another $13 million for the fill and construction of the runway.

Art **Linkletter,** recently elected a director of The Flying Tiger Line, is known all over America as a television personality, but in Los Angeles he also is held in high repute as a shrewd business man. He is owner, officer or director in 22 business enterprises. He's expected to make a definite contribution to the airfreight carrier as a member of its board.

The **Douglas Aircraft Co.** made 33 motion pictures in 1957, or about as many as the feature production of a major movie studio such as M-G-M . . . Defense subcontractors say the work coming out for bids is down 65-70% . . . Only airplane in both the Air Force and the Navy to use the same designation is North American's T-28 . . . Antelope Valley interests, headed by Congressman Edgar W. Hiestand, have launched a campaign for a missile development center in this area where Edwards Air Force Base and Air Force Plant 42 (Palmdale) already are located.

There's always a new way to save a buck. The Air Materiel Command depot at Sacramento, for example, has an arrangement with the U.S. mint at San Francisco whereby silver from condemned aircraft engine parts is refined and then returned for reuse by the depot's plating shop. The Sacramento base figures it has saved $63,421 in the last three years through this cooperation from the folks at the mint.

If you happen upon a Convair 240 with an aft-mounted retractable stairway—not a tail stairway such as that installed in Western Air Lines' 240s—it belongs to the Murray Corp. Pacific Airmotive Corp. worked out the installation, which weighs less than 200 pounds, or about half as much as the standard Convair forward-mounted stair. The aircraft, which the Murray Corp. bought from Sabena, was one of about 40 Convair 240s built without integral stairways.

Newest scuttlebutt gives North American's Columbus division an edge over Douglas-El Segundo in the Navy's attack bomber competition, although there is no verification and early reports had Douglas in front . . . Clyde Barnett, California state aviation director, reports new airport applications keep coming in at the rate of five or six a month . . . Commodore Aviation, which operates scheduled flights between San Francisco Bay and Lake Tahoe, has a new $75,000 hangar at Sausalito . . . New access road to the Edwards Rocket Base cuts off 50 miles of travel for workers . . . In its jet planning, United Air Lines figures one stewardess to about 30 passengers, or four stewardesses on a DC-8 sell-out flight.

How was Lockheed able to fly the Electra 56 days ahead of schedule and "sputnik" the Boeing 707 in the race to be first in the air? Don't ask us. We didn't think they could do it, and we couldn't have been more wrong. They've just got the old spirit out in Burbank, apparently.

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Summary of U.S. all-cargo airline operations for nine months ended Sept. 30, 1957

Compiled by American Aviation Publications from Official CAB Data

Airlines	TRAFFIC: Freight Ton-Miles	Available Ton-Miles Flown	% Available Ton-Miles Used	Revenue Plane-Miles	Scheduled Miles	% Scheduled Miles Completed	REVENUES & EXPENSES: Total Operating Revenues	Freight Revenues	Charter Revenues	Total Operating Expenses	Operating P or L
AAXICO[1]	8,031,494	10,759,676	74.6	1,655,697	157,414	100.0	$1,266,150	$105,130	$1,099,371	$1,175,905	$90,245
" [2]	8,627,437	10,999,839	78.4	1,204,492	158,916	99.9	1,351,191	110,444	1,115,661	1,206,985	144,206
" [3]	8,852,490	12,190,508	72.6	1,934,145	166,084	100.0	NA	NA	NA	NA	NA
"	25,511,421	33,950,023	75.1	4,794,334	482,414	98.8	2,617,341	215,574	2,215,032	2,382,890	234,451
Aerovias Sud America[1]	2,096,429	2,559,603	81.9	438,059	481,045	79.7	455,318	400,975	34,665	502,027	—46,709
" [2]	2,204,247	2,757,942	79.9	509,124	493,575	87.8	512,529	413,126	78,826	515,331	—2,802
" [3]	2,147,058	2,453,203	87.5	434,402	500,230	78.0	491,276	439,762	38,442	481,112	10,164
"	6,447,734	7,770,748	82.1	1,381,585	1,474,850	81.9	1,459,123	1,253,863	151,933	1,498,470	—39,347
Flying Tigers[1]	17,406,759	30,879,401	56.4	3,489,245	1,541,078	91.1	5,737,710	2,237,943	2,842,629	6,036,166	—298,456
" [2]	19,553,028	40,715,967	48.0	4,155,082	1,230,100	96.9	8,566,825	2,291,137	6,258,352	8,529,685	37,140
" [3]	22,616,318	46,372,201	48.8	3,975,874	1,213,683	99.1	9,466,631	2,125,514	7,195,036	8,969,188	497,443
"	59,576,105	117,967,569	50.5	11,620,201	3,984,861	95.3	23,771,166	6,654,594	16,296,017	23,535,039	236,127
Riddle[1]	7,888,322	11,835,251	66.7	1,677,664	1,492,337	95.1	NA	NA	NA	NA	NA
" [2]	8,452,136	11,588,438	72.9	1,638,006	1,483,155	92.9	1,821,460	1,516,050	35,542	2,588,140	—766,680
" [3]	7,674,662	10,649,797	72.1	1,586,247	1,396,401	88.4	1,489,215	1,390,241	62,452	2,077,037	—587,822
"	24,015,120	34,073,486	70.5	4,901,917	4,371,893	92.2	3,310,675	2,906,291	97,994	4,665,177	—1,354,502
Seaboard & Western[1]	3,866,034	7,981,470	48.4	940,705	581,349	100.0	3,352,565	1,008,337	1,130,035	3,012,488	340,078
" [2]	5,480,926	13,056,845	42.1	1,561,795	475,521	100.0	5,666,698	776,559	4,102,142	4,643,549	1,023,149
" [3]	3,938,185	19,018,619	20.7	2,050,042	579,228	100.0	NA	NA	NA	NA	NA
"	13,285,145	40,056,934	33.2	4,552,542	1,636,098	100.0	9,019,263	1,784,896	5,232,177	7,656,037	1,363,227
Slick[1]	13,970,832	28,084,292	49.7	2,878,752	2,066,590	95.6	4,403,231	2,218,457	1,948,420	5,685,238	—1,282,007
" [2]	13,414,998	29,661,354	45.2	3,014,031	1,758,945	97.6	5,228,486	2,081,523	2,966,885	5,991,841	—763,355
" [3]	11,690,210	26,901,364	43.5	2,692,999	1,400,940	99.4	5,159,488	1,871,248	3,133,395	5,456,650	—297,162
"	39,076,040	84,647,010	46.2	8,585,782	5,226,475	97.3	14,791,205	6,171,228	8,048,700	17,133,729	—2,342,524

[1] First quarter ended March 31. [2] Second quarter ended June 30. [3] Third quarter ended Sept. 30.

For the first nine months of 1957, AAXICO carried 30,062 lbs. nonpriority mail; Flying Tigers, 373,303 lbs.; Riddle, 226,831, and Slick, 567,804. Flying Tigers carried 111,837 lbs. priority mail, Riddle, 117,069 and Slick 134,557 lbs. In charter operations, Flying Tigers transported 84,081 passengers; Seaboard & Western, 38,717, and Slick, 55,719.

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EN ROUTE

by Wayne W. Parrish

Beautiful Adelaide (Australia, that is)

VERY SHORTLY after lunch I checked out of the hotel at Alice Springs and trudged down the dusty street to the Trans-Australia Airlines ticket office and checked in. I was informed that I would be returning to Adelaide in a DC-3.

Seems that a helicopter doing some government work near Darwin had had an accident a few days earlier, and the DC-4 on the Darwin-Adelaide run for that day was loaded with disassembled whirligig parts. So a DC-3 had been flown up to Alice Springs for us local passengers, if an 860-mile flight can be called local.

However, I'd have flown in anything for the long haul just to get away from the Australian bush fly. I guess you have to live there for a year to get used to those trillions of pests.

In due course I was at the airport and on my way south in the DC-3 over hundreds of miles of the most barren desert I've ever seen. Late in the afternoon we landed at a small town called Leigh Creek to refuel. This settlement is in a coal mining area a hundred or so miles north of Adelaide. If I thought I had escaped the bush fly I was wrong; Leigh Creek is merely a southern center for another billion or so and, since TAA has no aerosol sprays for its cabins, I had the flies with me for the whole trip.

What was to be a 20-minute stop turned out to be well over an hour. Seems that there was some water in the gas, or at least it was testing out that way, so the crew did a lot of taxiing before letting the passengers board. I was pleased to note the care the crew was taking. All of the effort appeared to be well justified because we had a smooth takeoff and smooth flight to Adelaide. Shortly after takeoff, darkness arrived and in due time I began spotting the lights of Adelaide.

Night lights pretty

I am always fascinated by cities at night from the air. I'll never forget my night arrival over Leningrad, for example, and I've had some wonderful night views of New York City and Los Angeles at various altitudes. And I can say truthfully that Adelaide was one of the prettiest sights I've seen at night as we swung in over the town and harbor.

They have a lot of brilliant yellow street lights down there and the harbor and park areas are crisply defined, separating lights from solid black portions. Mid-town there were colored neon lights, much as in the U.S. The city has about 400,000 population and is spread out over quite a distance. Anyway, I was thoroughly impressed.

I took the airport bus to the downtown terminal which happened to be only a few steps from my hotel, the South Australian by name, an old, rambling and oddly-furnished establishment that has seen better days in a previous epoch of civilization. But it was clean, not too uncomfortable and quite okay for one night, especially after I used my Boy Scout lessons to good advantage to blaze a trail through the jungle of creaking corridors, stairs and passageways so that I could find my way to and from my room.

So this was Adelaide, a solid city with a fine harbor often passed up by visitors to Australia because it is some distance west of Melbourne and Sydney and because they tell the visitor in those cities that "Adelaide is just another town —there's nothing there."

I spent an hour or two that night just walking around. Lots of well-stocked stores and an air of business prosperity. A very big railway station and some imposing but old-fashioned government buildings (Adelaide is the capital of a state). But everything seemed to be nicely closed up. Like other places in Australia, if you miss the meal deadline, you've had it. The only places I found open were a few milkshake, candy and modest coffee shops operated by immigrants from various parts of Europe.

Different ideas on travel

I did my nightly stint of washing my shirts, socks and shorts and got a good sleep. The next day was Saturday and I wasn't at all sure whether I would go to Perth 1,435 miles west or back to Melbourne and on down to Tasmania. The people who had arranged my itinerary had rather differing views from my own. I wanted to see both Alice Springs and Perth on the west coast. Back in Sydney they couldn't understand why anyone wanted to see either place, much less both.

Next morning was a little hectic. The Qantas, TAA and ANA people in Adelaide were not only solicitous but agreed with me that I should certainly go to Perth, if only for one night. (Nothing like flying 2,870 miles to spend 24 hours in a place!) So finally I got a seat cleared on Australian National Airways, leaving that afternoon and arriving mid-evening (several hours time zone change) on the west coast.

But a complicating feature was my old friend, the South Australian Hotel. Believe it or not, they have a 10:30 a.m. checkout time. No exceptions. You get charged for another day if you miss the deadline and believe me, these hotel blokes in Australia can be as severe and unbending as they can be in some places in England before the U.S. invaded the place and spread a little bit of informality around.

Obviously there has been no such invasion at the South Australian Hotel. I was late in getting back to get my bag, but a gal at the desk, who seemed to me to be beyond the retirement age, saved my neck by telling her superior that I had indeed made special arrangements and that I was okay. (Bless her old understanding soul.)

This 10:30 a.m. checkout is just another example of how Australian hotels, which are operated largely as adjuncts to pubs, or to obtain a pub license, must readjust if they hope to get tourist business. The checkout rule was as old as the hotel itself.

I had some time to spare before plane departure, so I paid a visit to the very extensive botanical gardens in the center of the city. They are lovely. There are few cities in the world that can boast such wonderful gardens in the heart of town. And well maintained, too. In the little remaining time, I paid a visit to the art gallery on the main street and was much impressed. Obviously there is a lot of civil pride in Adelaide. I rather liked the place, although I guess I wouldn't want to live there because it is pretty awfully conservative.

Adelaide closes up completely for the weekend. And I mean it closes up tight. Only Toronto in Canada could run it a race but even Toronto would lose, and that's really going to an extreme. But there are lots of things in Adelaide to remind one of the U.S., such as many Coke and milkshake signs, and the strings of naked light bulbs over the used car lots. There are lots of cars in Adelaide, including American makes.

Smart idea for signs

On the way to the airport I noted that an oil company and a breakfast cereal combined to put up a big lighted sign directing traffic to the airport where the airport road turned off the main highway. Seems to me that many airport managers and authorities in the U.S. could get commercial products to erect such signs and help direct the driver trying to find the airport. Such a deal costs the airport nothing and the advertiser gets some benefit out of his efforts.

So after 9,500 miles of flying since arriving in Darwin on nothing but DC-3s, DC-4s and a single-engined Beaver, I boarded a real honest-to-goodness DC-6B of ANA for a 1,435-mile hop to Perth. I had begun to think there was no modern equipment in the country. The DC-6B looked very good, and no less than three stewardesses were on board to provide service for the 47 passengers.

Go west, old Horace Greeley used to say, so I was going west as far as I could go in Australia.

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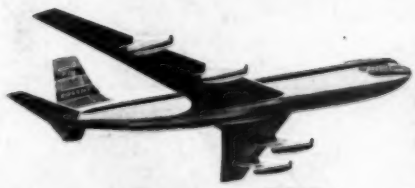

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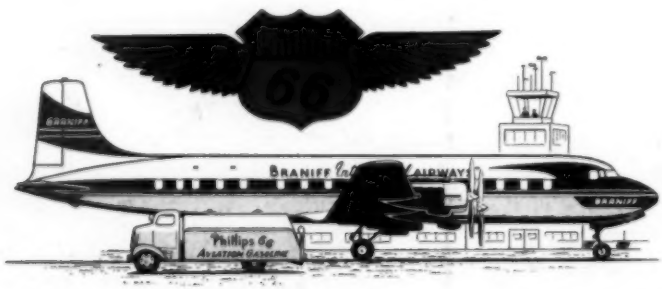

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